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THE PRESENT NEED FOR THE STUDY OF THE HISTORY OF MEDICINE.[1]

By SIR ST CLAIR THOMSON,
London.

A GOOD story, anent the study of the history of medicine, is told by Harvey Cushing. At an annual meeting of the American Medical Association he and G. C. Streeter requisitioned a stall and made an exhibit of books and incunabula associated with Vesalius, the father of modern anatomy and, one might almost say, the Messiah of the renaissance of medicine. It was alongside of the other stalls exhibiting surgical instruments, baby foods, drugs, and so forth. Over it was written, in large letters, "Vesalian Exhibit". It was on view some time before a solitary doctor arrived, laden with his collections from other stalls. He only stopped long enough to inquire: "Say, are there any samples given away?" "Samples of what", he was asked. "Why, of what you've got here—Vaseline, of course."

The present time seems opportune for considering the present need for urging the importance of the study of the history of medicine. All are agreed that probably there has been no previous period in the history of the world when such a rapid and general revaluation is being made of many ideas and factors in civilization which, for centuries, had been looked on as immutable. There are few of them which have not been thrown on an unstable market. Even the most gilt-edged have depreciated, and some suspicious ventures are being inflated, often by outside brokers, in the expectation that they may reach a steady quotation and be recognized as taking the place of old established but, at present, discredited securities.

[1] The presidential address read before the Section of the History of Medicine, Royal Society of Medicine, October 4, 1933.

This paper, which is contributed by request of the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, was published in a shortened form in *The Proceedings of the Royal Society of Medicine*. It is reproduced here *in extenso* by permission of the Honorary Editor of that Journal.

Now, as regards the history of medicine, I am ill fitted to open this discussion on the present day need for the study of it. I greatly appreciate the honour of being elected the President of this Section and, by keeping my ears open and my attention alert, I look forward to absorbing from the writings of my very learned predecessors and the discussions of my wise brothers in this Section, sufficient to make me a little more worthy of your generous confidence than I am at present.

We must confess that it is difficult in early life purposely to turn our gaze backwards—for shadows lie behind us—to study the route travelled by mankind and to recognize what Castiglioni calls "*la strada maestra del nostro lungo cammino*", the main road of our long journey. The child so soon a youth, the youth a man, is much more eager to run the race his fathers ran, with all "the rapture of the forward view". Personally, although I do not entirely accept the dictum of Mr. Ford, of Detroit, that "all history is bunk", I confess that, until I arrived at what we like to call "the years that bring the philosophic mind", my historical rambles rather tended to depress me by making me notice how mankind so often went wrong in almost every possible direction before finding the main road—the *strada maestra*—and how reluctant he was, even then, to walk therein. I had almost reached the dead wall of the satirist who came to the conclusion that there is nothing new except what had been forgotten, and that one should let the dead past bury its dead.

Many years ago I made the acquaintance of an American friend in Florence. He there said to me: "See here, Doc, I have no further use for this place. We began where this country left off". My poor friend, like myself, was suffering from the disabilities of youth. He lived long enough to become wealthy; to develop a taste for excavating the past on the banks of the Nile; to collect and present to his home town one of the very largest collections of early books concerned with the discovery of America; and to find that Italy has not left off yet.

Having ceased, like my American friend, to be an infidel in this matter of the study of history, I enter on the duties of President with all the ardour of a late convert and all the ignorance of a beginner. I rely on my colleagues to be patient and tolerant when I display my lack of knowledge of our subject.

Figure I.
The Art of Medicine. A physician of the Victorian period.

We are reminded by Sudhoff[1] that last century the study of the history of medicine was a declining art. It appears that more than a hundred years ago the subject was being taught in all the medical schools of Germany. In France we have the evidence of the interest taken in the older medical classics by the issue of Littré's bilingual edition of Hippocrates in ten volumes. This was published in 1839, less than a hundred years ago.

Then came the rapid development of scientific medicine. We have only to think of the work of Pasteur and Lister, and to recollect that, after centuries of guesswork we gained, in the short space of the last twenty years of the last century, a fair knowledge of the precise cause of gonorrhœa (1879), malaria (1880), pneumonia (1880), typhoid fever (1880), glanders (1882), tuberculosis (1882), cholera (1883), diphtheria (1883), Malta fever (1887), plague

(1894), yellow fever (1899), hydrophobia and other diseases. To this phenomenal advance of scientific medicine and, partly, to a natural reaction from the centuries of speculation, may be attributed the neglect which overtook the study of the history of medicine. Sudhoff reports that one chair after another in Germany died out.

With this rapid evolution of scientific medicine, with the wonderful powers placed in our hands by anæsthesia and Listerism, it is no wonder that the strong wine of rapid progress went to the heads of the many who do not remind themselves of the inevitability of gradualness. Sir William Hamilton said of the physicians of the Georgian period that they had tried to make medicine a science, and had failed, so they made it a trade and had succeeded. We, for whom medicine has become so largely scientific in the present time, must see to it that we do not neglect the art of its practice. There is little fear of its becoming tainted with trade if we urge the need of the history of medicine and learn from it the Hippocratic tradition of a liberal profession.

The study of the history of medicine was possibly overdone by physicians even up to the beginning of the nineteenth century. Though neither Aristotle nor Hippocrates had ever opened a human body,[2] knowledge was sought for chiefly in the Greek, Arabian and Roman authorities. Still, these classical studies gave the Georgian physicians a culture, an imagination and an idealism while they were slowly absorbing the scientific spirit of the Vesalian renaissance. Besides, if these physicians, according to Sir W. Hamilton's jeer, had failed to make medicine a science, their culture appears to have given them a consideration as individuals which their too scientific successors today sometimes seem to have lost.

None of us, no profession, no art, no school of thought, no calling, no craft—just as no teacher and no politician—can escape the influence of the *Zeitgeist*. These epochal discoveries have led to the glorification of the scientific side of our calling and the elevation of research. Research came to mean little beyond laboratory research. With this came the exaggeration of the physically demonstrable—the counting of cells, the gazing at test tubes, the peering down microscopes, the inspection of plucked out fragments of the sick man's anatomy. The student ceased to lay a friendly hand on his patient's arm to feel his physical fitness, or to make use of such old fashioned investigations as the pulse, the tongue, the skin or even the thermometer. Inquiries into his circumstances, habits, antecedents, personal and family history were slighted, although a membership of this Section would have reminded him that:

> There is a history in all men's lives,
> Figuring the nature of the times deceas'd:
> The which observ'd, a man may prophesy,
> With a near aim, of the main chance of things
> As yet not come to life.
>
> (*Henry IV, Part 2, iii, 1.*)

The young physician is apt to be too intent on more mechanized and objective interests, taking blood pressures, making blood counts, testing sputum and, inevitably, having X ray examinations. As in so many other walks in life nowadays, he is inclined to become the slave of the machine. The technique of the mechanics of our science has left little time to study the art of medicine. We have become statistically stereotyped, with card-filing minds. Colleagues no longer bring me a suffering fellow creature to help; they bring me a dossier with a robot in tow.

FIGURE II.

The Science of Medicine. A physician of the present day. [For permission to reproduce this photograph we are indebted to Messrs. Watson and Sons (Electro-Medical), London.]

In his urge to be scientific the practitioner is liable to forget that "*l'amour de la médecine fait le savant; l'amour du malade fait le médecin*". Had he studied the history of medicine, the physician of today would not be so apt to be swept by the current of mechanical developments from the sure foundation of one of the oldest arts in the world.

This astounding development in the science of medicine in the last hundred years is, of course, only a cause for rejoicing and thankfulness. I have elsewhere expressed the opinion that surgery which, of course, is included in medicine, has made more progress in that time than in all the ages since Hippocrates. It is only the exaggeration of its application and the neglect of the art of medicine that I am deploring. As happens in the zigzag evolution of this unintelligible world, a reaction is already setting in. The modern scientific equipment, by itself, has failed to pluck out the heart of this mystery of life, disease and death. Human ways, just like Nature as a whole, now threaten to overdo the tendency in a reaction from the objective to the subjective. Without first urging a wide and deep study of psychology, and a larger view of biology, we are threatened with a half-baked appreciation of both of them within our own ranks and, outside of them, by a monstrous regiment of faith healers.

In urging the value of the history of medicine to regain the *strada maestra del nostro lungo cammino*, the highway of our long pilgrimage, let us consider what the study of our subject may do for us.

The history of medicine, like that of mankind, is made up of advance and regression, of success and its reverse. We can learn from both. The individual organism cannot be studied without a knowledge of the evolution of every part and organ, even of every cell. A similar study is necessary in regard to medicine, not only as concerning the individual, but also the mass, and with full consideration of race, country, climate, creed, conditions and the contributions made available from other arts and sciences. So, as our learned Secretary, Cawadias, has reminded me, the history of medicine is more than history, it is medicine itself. It is the most perfect method of approach to the scientific problems of the day because, as in all sciences, the fundamental principles can be studied only through the historical approach.

In conclusion, let me try to summarize, for the sake of convenience in our discussion, what the study of the history of medicine may help us to do in present day conditions:

1. To learn to think historically. To become "historically minded" as we have become "banana minded".

2. To absorb, unconsciously, from its proud records, a high standard of ethics.

3. To respect the antiquity of our calling. The only other sciences to compare in age with it are mathematics and astronomy. In its early days medicine had much to do with both of them. Physics and chemistry, which have been revolutionizing the world in the last hundred years, are children compared with medicine, to which they have contributed so much.

4. To inspire us with a love of our profession, a regard for its dignity and an appreciation of its difficulties.

5. To respect tradition. This legacy from the past may be false, or temporarily true, or everlastingly true. Every item of what we call progress will strengthen tradition, if it can be assimilated; otherwise it will fade out; or it may help to the undoing of falsely founded tradition.

6. To imbue us with moderation in esteeming the value of our work, and of ourselves! As Allen Pusey says: "In the first flush of opulence and success there is no state of mind so difficult to maintain, or so necessary for future success, as humility".[3] It may help our humility to recall at times that we have medical records dating back to 2,500 B.C.; that asafœtida, henbane, myrrh and camomile were in use before the Christian era; that the laryngologists then made up their lozenges with liquorice, even as I do today, and that the comforting poultice has soothed many a Babylonian whitlow, although as Mr. C. J. S. Thompson reminds me, we have abandoned the custom of ordering the patient to eat it after application. For at least three thousand years man has unloaded his colon with castor oil and aloes, has been helped to cough up his catarrh with squills, has balanced his acidity with bicarbonate of soda and has eased his pains with opium.

7. To realize the changing character of medical theories. This, while we keep our respect for tradition, will fortify our independence of judgement towards new opinions and hypotheses.

8. To increase our self-confidence and to lose the inferiority complex which, owing to the poverty of scientific medicine in former days, was apt to be concealed by formalism and pedantry.

9. To value the study of our subject even as a hobby, although not forgetting that Sir Henry Wellcome reminds us that a museum and medical history should be formed, "not simply to bring together a lot of curios for amusement", but to make it useful to students and to all those engaged in research. It also stimulates us to be interested in the men, the methods, the times and the circumstances by which medicine has been evolved.

10. To stimulate our general culture by reviving a closer kinship with literature, art, music, poetry and the adornments of life. The physician of the present, scientific day need not become merely a medicine man.

11. To show how knowledge tends to get overlaid with opinions and to emphasize the need, from time to time, of getting rid of what is commonly known as "junk".

12. To learn the art of guiding men. Knowing that we cannot suppress their prejudices and passions—a superhuman task—we must learn to restrain them, to encourage them and persuade them, for their own health and happiness as well as for the general welfare, to submit themselves to the control of reason, as far as it is possible.

13. In conclusion, to show that we have more need today than at any previous period of the world's history to agree with Andrew Lang that "the little present must not be allowed wholly to elbow the great past out of view".

I look forward, with great delight, to sharing in the work of this Section, to investigating the records of our great past, and to tracing and helping to keep clear the main path of its progress—*la strada maestra del nostro lungo cammino.*

References.

(1) Karl Sudhoff: *Bulletin of Johns Hopkins Hospital*, XLVI, 1930, page 101.
(2) Charles Green Cumston, *Medical Journal and Record*, New York, CXXII November 18, 1925, page 615.
(3) W. Allen Pusey: "The Importance of being Historically Minded", *Proceedings of the Institute of Medicine of Chicago*, Vol. 7, Number 1, January 15, 1928, page 1.

THE HORMONAL CONTROL OF THE FEMALE REPRODUCTIVE SYSTEM.[1]

By R. Marshall Allan, M.C., M.D., F.R.C.S.E., F.R.A.C.S., F.C.O.G., F.A.C.S. (Hon.),
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The early history of gynæcology was a record of brilliant achievement as regards operative procedures. Following on this era came the period

[1] Read at a meeting of the Obstetric and Gynæcological Section of the Victorian Branch of the British Medical Association on May 8, 1934.

of important contributions to the pathology of the subject, while within the past decade the physiological aspect has come to the front with results that have completely changed our concepts of many gynæcological problems. Provided the modern gynæcologist has taken the trouble to obtain a sound knowledge of the special anatomy, physiology and pathology of the female reproductive tract, he need not fear the disappearance or absorption of his branch of medicine by the general surgeon. Our debt to the research worker for the investigation and interpretation of the various phenomena associated with the reproductive cycle is very great indeed. Few clinicians are qualified to undertake physiological research, therefore it behoves us not to lose contact with current investigations, even if it be only to counteract the superoptimistic statements emanating from the drug manufacturers regarding the potency and value of their preparations.

It would be impossible within the limits of a single paper to describe all the work of the past decade, so the discussion will be limited to a survey of the ovary-pituitary control of the reproductive cycle and the therapeutic results as regards the treatment of various gynæcological disorders.

THE HORMONES OF THE OVARY.

Our present knowledge of the female gonads has been obtained only after many years of earnest work. The principal object of the primary ovarian hormone is to maintain the genital tract and the secondary sexual characteristics in full functioning condition. In addition, the hormone from the *corpus luteum* is concerned with the adjustments of the genital tract to the needs of the developing embryo and so represents a comparatively late acquisition in endocrinal control. This secondary hormone, regulating exclusively feminine functions, is definitely supplementary in action to the primary hormone.

The Physiology of the Mature Ovary.

The changes following surgical removal of the ovaries supplied the first experimental evidence of their endocrine functions. Apart from the resultant sterility, atrophy of the genital tract with retrogression of the secondary sexual characteristics was also observed. If the castration had been performed on immature animals the genitalia failed to develop, while differences in the secondary sexual features were also noted.

The next step forward was the prevention of such changes in the castrated animal by the transplantation of ovarian tissue, thus proving that the influence of the ovaries was endocrinal and not nervous. The logical sequence of this was the removal of different parts of the ovary in order to determine whether particular tissues were vested with specialized control. Attention was long centred on the *corpus luteum*, as it is the most prominent structure in the mammalian ovary. Following the classical experiments of Fraenkel, whereby excision of the *corpus luteum* in animals caused abortion, the major part of the endocrinal functions was attributed to this structure, while the follicle was considered to have merely an egg-producing function.

The Œstrogenic or Follicular Hormone.

Real advance first came from the histological studies of Stockard and Papanicolaou on the guinea-pig in 1917; these were followed by the work of Long and Evans and Allen on the rat, concerning the cyclic changes in the genital tract as seen by vaginal smears correlated with sections of the vagina, uterus and ovary. The obvious conclusions from this work pointed to the follicles rather than the *corpora lutea* as the chief source of hormone in non-pregnant animals. Allen and Doisy in 1923, by injecting fresh follicular liquid into castrated mice and rats, were able to reproduce the whole cycle, and such animals are now used as an index for the presence or absence of follicular hormone in any given sample. The fundamental reactions of hyperplastic growth and secretion were observed in the genital tract from the tubes to the vagina, while the mammary glands were also stimulated. This wave of growth was also associated with changes in the contraction rate and amplitude of muscular tissues in the whole tract. These processes culminated in œstrus—the normal period of sexual activity of lower animals. Following the cessation of secretion of the hormone or a decrease below a threshold level, this hyperplastic condition ceases and much of the new growth degenerates and is removed, restoring the genital organs to the condition of castration or rest. Similar results were obtained by the use of grafts or injections. Following this demonstration that the main action of the follicular hormone was one of stimulating growth in the tissues of the genital tract, it was concluded that it was also responsible for similar growth in immature animals. During immaturity, as ovulation did not occur, there could be no formation of *corpora lutea*. The rat was a good subject because the vagina is a solid cord until puberty. Injections of the follicular fluid caused rapid growth of the tissues with opening of the vaginal orifice. In addition, the tiny uterus grew rapidly and became grossly distended with an accumulation of secretion. Section of the ovaries showed little or no effect of the hormone on their structure; therefore the effect produced was one acting directly on the uterus and vagina. A similar result was obtained by the use of implants or by the injection of active extracts of the anterior pituitary whereby the ovaries are stimulated and in turn affect the accessory genital tissues. This pituitary effect could not be produced in castrated animals, thus showing that it acted solely through the ovaries. A difference in threshold reaction was also observed—smaller amounts were needed to produce growth of the vaginal epithelium than to induce endometrial hyperplasia, and especially hypertrophy of the uterine musculature. The nature of the action of the follicular hormone on the genital tissues is only partially understood. It

may be a preliminary stimulation of the cells which reacts secondarily on the blood supply, or the hormone may directly stimulate the vascular control mechanism, as is apparently the case with adrenaline. This mechanism is involved, for hyperæmia is always associated with the œstrus state. The rôle of vascular control has been studied by the transplantation of uterine mucosa into the anterior chamber of the eye in the rabbit. Vascular connexions are soon formed, and during œstrus vaso-dilatation was more frequent than the alternate vaso-constriction and dilatation of the resting period. Following castration vaso-constriction was permanent; but the reactions of the œstrus state could be restored by injections of follicular hormone. A similar vascular control is seen in the changes of the combs of capons under the influence of testicular hormone and in the colour changes of the sexual skin of monkeys.

Sources of Supply and Isolation of the Œstrogenic Hormone.

Numerous investigators have shown the widely spread occurrence of the œstrogenic hormone, not only in man and the lower animals, but also in the vegetable kingdom. In man it is produced both by the follicle and by the *corpus luteum* and during pregnancy by the placenta. The principal sources for its commercial production are the urine of pregnancy of women and mares.

Although the original attempts to produce a pure preparation were failures, in 1929 from four centres came the almost simultaneous announcement of success—Doisy (America) followed by Butenandt (Germany), Laqueur (Holland), and Marrian (England). Their researches showed that the œstrogenic hormone contained two substances: (*a*) A hydroxyketone with the formula $C_{18}H_{22}O_2$. To this various names have been given: theelin, "Progynon", ketohydroxyœstrin, "Menformon", "Amniotin", "Agomensin". (*b*) A triol or trihydroxy compound with a formula $C_{18}H_{24}O_3$, thus differing from the first by a molecule of water. This has been termed: theelol, follicular hormone hydrate, trihydroxyœstrin, emmenin. To simplify matters the English workers have suggested the terms "œstrone" and "œstriol" to describe the two substances.

Butenandt has shown that these substances are related to the sterols and bile acids. Meanwhile Girard has isolated from mare's urine three more hydroxyketones, two of which (equilin and hippulin) are isomeric substances with two less hydrogen atoms than œstrone, and the third (equilenin) with four hydrogen atoms less. Especial reference must now be made to the remarkable discovery of Kennaway, Cook and Dodds, that a number of synthetic ring compounds showed strong œstrogenic potency on castrated rats and that two of them were also powerful carcinogenic agents. They recall that there is in some respects a similarity between the cell proliferation of the œstrus state and that of the early stages of malignant disease. It is possible that some abnormality in sterol metabolism in the body may produce such carcinogenic substances. The œstrogenic hormone is probably produced from the sterol group by a process of dehydrogenation, and Girard's three products therefore represent further stages in the process, while it is not unreasonable to presume a step further and the production of cancer-producing substances.

Butenandt suggests that œstrone is the actual œstrus-producing hormone secreted from the ovary and that, prior to excretion in the ovary, it is converted to œstriol to increase its water solubility. However, at present evidence is wanting to prove which of the two is the sole œstrus-producing hormone. In the remainder of this paper the term "œstrin" will be employed rather than other terms which are trade names of different firms.

Standardization of Preparations.

Apart from the confusion caused by the nomenclature of the hormone, further difficulties have arisen by reason of great variations in the stated potencies of various preparations due to differing ideas regarding the methods of bio-assay to be adopted. Some preparations are given in mouse units, others in rat units, and the difference between these may vary as much as one to twelve. Normally five mouse units are equivalent to one rat unit. Some firms have graded their preparations by the result of a single dose into the test animal; others have used divided doses over a definite period. The amount of a preparation standardized on a single dose in the test animal may have to be fifty times greater than when the unit is calculated after multiple injections. Again, difference of opinion as to what constitutes a positive vaginal smear has made it difficult to compare the mouse unit standard of one preparation with the rat unit of another. The route of administration is also important. The best results follow hypodermic injection when smaller doses are required than if the oral or rectal routes are employed.

The Hormone of the Corpus Luteum.

As has already been stated, the *corpus luteum* dominated the early work on the ovary, and it has been only since the preparation of active extracts that the true function of this portion of the ovary has been established. The earliest theory was one of inhibition. Loeb demonstrated that removal of the *corpus luteum* from guinea-pigs definitely hastened the next ovulation, whereas extirpation of other parts of the ovary had no such effect. The work of Fraenkel, in producing abortion in animals, has also been noted. The effect of rupturing persistent *corpora lutea* by rectal manipulations in cows, with resultant ovulation and œstrus within forty-eight hours, has long been known to veterinary surgeons. Corner and Allen have further shown that if bilateral oophorectomy be done a few hours after mating, when the fertilized ova are still in the tube, abortion will not follow, provided that injections of luteal extract are given. Pregnancy in such cases would proceed to term.

Physiological Effects of Luteal Hormone.

Secretory Changes in Uterine Mucosa.—Corner and Allen first showed that rabbits castrated during œstrus and then given luteal extract for five days demonstrate in the uterine mucosa the dilated glands and active secretion of the premenstrual stage. Hisaw and Leonard, in addition, proved that this reaction was due to the synergistic action of the two ovarian hormones. They termed this the "one-two" reaction, meaning that the uterus should first be primed with follicular hormone before the luteal extract could produce the secretory changes of the progestational phase. Luteal extract alone cannot accomplish this effect. When both are present the effect may depend on the quantitative balance between them—an excess of œstrin would inhibit the change, but the luteal phase cannot be indefinitely prolonged, for before long the cycle will resume its regular changes.

Uterine Motility.—In general the non-pregnant uterus undergoes cyclic changes in contractility correlated with the different phases of the œstrus cycle. As the follicle develops there is marked contractility of the entire genital tract followed by inhibition of movements when the *corpus luteum* is formed. The practical value of this will be discussed later under the heading of dysmenorrhœa.

Isolation of the Active Principle.—The isolation of the active principle is fraught with great difficulty because of the smallness of the structure from which it is separated. Attempts to obtain the hormone from fœtal tissues or the blood and urine of pregnant women have been unsuccessful. Another obstacle is the presence of œstrin with the associated problem of its elimination. The difficulty in obtaining commercial amounts will be appreciated when it is noted that 300 to 400 pig ovaries are needed to produce a kilogram of *corpora lutea* from which 30 to 35 rabbit units can be prepared—an amount which will give only one dose. The hormone is a fat-soluble substance and, unlike œstrin, is very unstable in alkaline solutions. It has been named "progestin" by Corner and Allen, "corporin" by Hisaw, and "lutin" by Clauberg. Hisaw isolated two other substances. One caused mucification of the vaginal epithelium in the mouse. This has since been proved to be an early effect of œstrin on the mucosa and in the mouse is the most marked luteal reaction. The second substance, "relaxin", caused marked subluxation of the pelvic girdle in the pregnant guinea-pig. Other observers produced the same results with injections of œstrin, and these were probably due to a mixture of the two hormones. In any case the reaction is peculiar to the guinea-pig.

While there is not at present any progestin for sale, the effect can be produced by the use of the anterior pituitary-like substance contained in the urine of pregnancy, and this will be shortly discussed.

Summary of the Duality and Mutual Relationship of the Ovarian Hormones.

The following is a summary of the duality and mutual relationship of the ovarian hormones:

1. The primordial follicles before maturation contribute to the normal development and growth of the uterus and genital tract by the excretion of small amounts of follicular hormone.
2. When maturation occurs the œstrogenic content of the follicles produces the normal proliferative phase of the uterine cycle.
3. The *corpus luteum* formed after rupture of the follicle by means of its hormone is concerned mainly with the progestational secretory or transformation phase of the uterine cycle.
4. If pregnancy does not ensue, there is a sudden cessation of the hormones associated in man and the apes with tissue changes and menstruation, and in animals with degeneration.
5. If pregnancy occurs, the *corpus luteum*, by means of its œstrin content, helps in the further proliferation of the mucosa, and by means of the progestin assists in the formation of the decidua of early pregnancy.
6. These changes in the ovary are under the control of outside influences which will now be discussed.

THE HORMONES OF THE ANTERIOR PITUITARY.

That the periodic changes in the ovary depended on a source external to that organ was believed for years before the actual discovery of the structure responsible for this control. The hypothetical hormonic controlling substance had been termed "generative ferment", "X substance" *et cetera*. The proof of the relationship of the anterior pituitary to the ovarian changes was based on two types of experiment: (*a*) removal of the pituitary, (*b*) pituitary implants or injection of extracts. The earliest experiment was the transplantation of an immature ovary into an adult castrated animal, when rapid growth of the ovary to maturity was observed. But definite proof first came with the epoch-making discoveries of Smith and Engle in America and Aschheim and Zondek in Germany. Smith showed that removal of the anterior lobe of the pituitary from rats not only prevented further development of the gonads, but also caused atrophy of the organs. When removal was performed on immature animals the genitalia remained infantile. Evans at this time was working on the injection of pituitary extracts into rats and produced gigantism as well as inhibition of ovulation and the complete cessation of the œstrus cycle. He maintained that two hormones were involved: an alkaline aqueous extract producing growth, and the other an acid aqueous extract affecting the reproductive cycle. Examination of the ovaries showed them to be full of luteal tissue without the intermediate stage of ovulation. Although it had always been assumed that luteal tissue could not be formed in the absence of follicles, Parkes showed that after destruction of all follicles by X rays injection of pituitary extract into mice resulted in the formation of luteal tissue. The ovarian stroma in such cases can apparently be suitably stimulated to form luteal tissue.

So far the ovarian changes experimentally produced had not included ovulation and the forma-

tion of normal luteal tissue. Smith, by daily implants of anterior lobe into immature rats, induced structural and functional changes similar to those appearing at sexual maturity in untreated animals. Aschheim and Zondek at first used a single implant into mice and produced follicular maturation, hæmorrhage and the formation of *corpora lutea*. The difference between the two results was probably due to the variation in dosage and to the differing responsiveness of the test animals. They also showed that the anterior pituitary works directly on the gonads, because the implantation of pituitary tissue into castrated mice caused no effect on the uterus and vagina, thus proving that changes in the secondary sex organs were entirely dependent on the secretory activity of the ovaries.

Gonadotropic Hormones in Urine.

After the follicle-stimulating effect of the anterior lobe had been demonstrated, Aschheim and Zondek made the discovery in 1928 that the urine excreted during pregnancy by the human subject contained a substance or substances with an action on the ovary closely resembling that brought about by the anterior lobe. This effect was particularly typical in the immature mouse, and on this was based their well known pregnancy diagnosis test. They then formulated the theory that two gonadotropic substances existed in the anterior lobe. One represented the hormone causing follicular maturation and the secretion of œstrin and was termed prolan *A*, while the second brought about luteinization followed by the excretion of luteal hormone and was called prolan *B*. Both preparations were isolated from urine and standardized in mouse and rat units. They maintained that the anterior pituitary was the motor of the ovary and thus governed all the changes of the menstrual cycle. Since that date much work has been done, especially in the investigation of the amounts of such hormones in the blood and urine during various stages of life and pregnancy. While these hormones are excreted in the urine in more or less equal proportions, at times there may be a vast preponderance of one or another.

Opponents of the theory of dual hormones have maintained that the varying reactions in the ovary may be caused by different amounts of one and the same hormone. This opposition to the original view is strongly held in America and by many English and German observers, and the matter is still *sub judice*.

The Probable Source of the Gonadotropic Substances in Urine.

Much of the work of recent years has been concerned with the origin of the gonad-stimulating factors in the urine, in particular as to whether they arise from the anterior lobe, the placenta or from both.

The primacy of the anterior pituitary was challenged by the work of Philipp; Philipp's work was confirmed by Ehrhardt and Mayes. Philipp showed that implants of anterior lobes from pregnant women produced none of the ovarian reactions described by Aschheim and Zondek. This might have been due to the non-secretion of hormones during pregnancy or secretion at a decreased rate or at such a rapid rate that none was stored in the pituitary at the time of implantation; the latter was Zondek's view. The exact reason for this absence of reaction is yet unknown, and in lower animals the implant is quite active.

While investigating the relative amounts of follicle stimulating and luteinizing factors during pregnancy, Hamburger made some important observations. He divided his cases into two groups: (*a*) a castrated group, in which the ovaries were stimulated by gonadotropic hormone in the urine of male and female castrates, post-menopausal cases, and those of carcinoma, excluding teratomata and chorion epithelioma; (*b*) a pregnancy group, in which the ovarian stimulation was obtained from the urine of pregnant women and patients with teratomata or chorion epithelioma. The hormone in the castrated group tended to stimulate a large number of follicles in the rat ovary, while urine from pregnant animals picked out a few follicles and developed them to excess. He considered that the source of this follicle-stimulating hormone in urine from castrated animals was probably limited to the anterior lobe, whereas in pregnancy urine both pituitary and placenta must be considered. Although he considered that the follicle-stimulating hormones of the pituitary and placenta were different substances, he was not certain whether there were two separate luteinizing factors.

Engle has similarly shown that pituitary implants and injections of urine produce varying effects on the ovary. The former were associated with marked follicular growth, while with urine of pregnancy the follicles were atretic and luteinization excessive. Evans and Long claim that the weight of the ovary is proportional to the amount of implanted tissue. Following injections of urine from pregnant animals a very slight increase was noted, and only if large doses were given over a prolonged period did the weight of the ovary approximate to what was obtained in a short period from pituitary implants. The latter caused more general follicular development than did injections of urine, when a smaller number of follicles were picked out, as was noted by Hamburger.

Philipp's patient with a hydatid mole who persistently failed to react to a pregnancy test is also quoted against the pituitary origin of the hormone in the urine. Implants into mice of the mole after operation, however, gave a positive reaction. Examination of the uterus showed that a layer of fibrin separated the growth from the blood stream, thus preventing any hormone from entering the maternal circulation. From this case it was deduced that the chorionic tissue produced the anterior pituitary-like hormone. The chorionic origin was further supported by the enormous increase in hormonal content of urine in cases of

vesicular mole or chorion epithelioma as compared with normal pregnancy. Hamburger reported a case in which bilateral oophorectomy had been performed at the second month of pregnancy. After operation the hormone diminished to zero and later returned to normal levels, thus showing that the placenta could produce the hormone. In favour also of the placental origin of the anterior pituitary-like hormone is the sudden fall in amount noted during the puerperium.

The pituitary, however, still plays a part during pregnancy, for ablation of the pituitary in animals invariably produces abortion. Moreover, during pregnancy certain characteristic changes occur—increase in volume and weight, and a change in the numerical proportion of chromophobe cells, which turn to pregnancy and chromophile cells.

The main hypothesis so far advanced is that of Evans, that the gonadotropic hormone found in the urine of pregnancy is merely an activator for a pre-hormone of the anterior lobe converting it into the pituitary sex hormones, but having itself no direct effect on the ovaries. Hamburger has varied this by advancing the theory that the gonadotropic hormone of chorionic tissue (urine of pregnancy, placenta, chorion epithelioma) differs from that of the anterior pituitary in being able to stimulate only such ovarian follicles as are already subject to some minimal action of the anterior pituitary. If this be true, we still are in the dark regarding the cause of the primary stimulation of the anterior lobe.

In some hormonal aspects man is in a class by himself, for the flooding of the pregnant organism with gonadotropic hormones is found only in man and the higher apes. Again, in contrast to the human pituitary during pregnancy, those of lower animals contain sex hormones equal to or greater than normal amounts. The mare is the only exception, and here the gonadotropic results resemble a pituitary action more than a placental effect. The whole question of the duality or identity of the gonadotropic hormones in the urine is still unsettled, mainly because of the inadequacy of the biological tests and the varying results obtained with different animals. The matter may depend upon the physiological state of the receptor organ rather than upon the nature of the active principle, for the best follicle-stimulating extract tested to date will produce luteinization in the rodent after continuous injections. Zondek has recognized this difference between mice and rats in response to anterior pituitary stimulation, for prolan *A* is standardized in rat units, while mouse units are used for prolan *B*, because the rat shows less luteinization than the mouse.

On the whole there are more physical and chemical resemblances than differences between the two hormones. For the present it would be best to assume a double action—the hormone being produced primarily by the anterior lobe and later during pregnancy production is taken over by the placenta.

The Excretion of Hormones during the Life Cycle.

In addition to the cyclical changes during the period of sexual maturity, the ovary presents two marked alterations in activity—at puberty and the menopause.

From investigations on pig embryos Smith has shown that the anterior lobe contains active gonadotropic hormones at an early stage. Although reaction of the ovary does not usually occur before the onset of maturity, this has been observed. The reason for its absence in many cases may be due to non-secretion of the hormone into the blood stream before a definite stage of development is reached or the rate of secretion may not be great enough to stimulate the ovary prior to sexual maturation. The finding of Robson that the response of the mouse ovary to gonadotropic hormone injections is greatly decreased by the simultaneous injection of adrenaline suggests that some substance circulating in the blood may take part in determining ovarian activity at various stages of the life cycle.

After the menopause the human pituitary and likewise the pituitary of senile animals still contain gonadotropic hormone. Zondek's work on anterior lobe implants and injection of prolan into senile animals showed marked ovarian changes with reestablishment of œstrus. Therefore it appears that specific hormones are still produced after the menopause, although ovarian activity has ceased. One possible explanation of this finding is that the pituitary does not secrete sufficient hormone to act on the senile ovary.

Œstrin Secretion.

The excretion of œstrin begins at puberty and, while none has been found in the urine before this period, it is not certain that small quantities are not secreted to aid in the pre-pubertal growth of the organs. Œstrin is continuously secreted during the menstrual cycle, reaching a maximum in the pre-menstrual period. During pregnancy there is a rapid increase, culminating at the end of pregnancy and followed by a decrease to normal by the end of the first week of the puerperium. At the menopause the initial stages are characterized by an increase in elimination of the hormone accompanied by some hypertrophy of the uterus. This period may last several weeks or months and is then followed by a marked diminution. Naturally, during this initial stage œstrin treatment would be useless.

Gonadotropic Hormone.

Gonadotropic hormone is secreted during the greater part of the life cycle. It is found in comparatively large amounts in the urine of new-born infants and before puberty has been noted in about half the cases investigated. During the menstrual cycle only prolan *A* is excreted, and mainly during the second half of the cycle. Unlike œstrin, the gonadotropic hormone reaches a maximum early in pregnancy, when both prolan *A* and *B* are present, and then gradually falls. This rapid excretion

coincident with the embedding of the ovum suggests that the latter liberates a substance which directly or indirectly stimulates the production of the gonadotropic hormone. Following delivery the hormone rapidly falls to normal levels.

At the menopause Zondek differentiates three stages: (*a*) the poly-folliculin or poly-hormonal stage already referred to, when clinically an enlarged soft uterus is noted; (*b*) the oligo-folliculin stage, when œstrin secretion practically ceases and the vasomotor disturbances are prominent; (*c*) the polyprolan stage, indicating the end of functional activity of the ovary and, as a secondary effect, atrophy of the uterus. At this stage œstrin is not present in the urine, but there is a marked increase in excretion of prolan *A*, which may remain for many years. Similar results follow operative and X ray sterilization. The cause is as yet unknown. Zondek made two suggestions: (*a*) that the pituitary hormone is excreted because, the ovary being senile, it has no longer any object to act upon; (*b*) the cessation of ovarian secretion removes an inhibitory action on the pituitary, hence an increase in pituitary secretion in the urine.

Other Pituitary Hormones.

The growth hormone has already been noted. Collip has claimed to have obtained thyreotropic, thymotropic and adrenotropic hormones. Riddle has isolated a hormone connected with lactation. If the existence of these be confirmed, then indeed is the pituitary the wonder gland of the body, for no mention has been made of the proved principles of the posterior lobe.

The Clinical Application of Hormonal Research.

Broadly speaking, the clinical applications of the foregoing physiological investigations may be grouped under two headings, diagnostic and therapeutic. While important and spectacular progress has been made in the field of diagnosis, the therapeutic advance has yielded meagre and disappointing results. This lack of success is due to a number of reasons, among which the most important are the difficulty of applying laboratory information to gynæcological treatment and the equal technical difficulty of estimating adequate dosage of the various preparations.

It is impossible to select a large number of normal individuals for experiment, as with animals. The length of the human life cycle as compared with lower animals is also an important deterrent in the solution of many problems. The phases in man which take years are completed in days, weeks or months in laboratory animals. Comparison is further complicated by the marked species variation to the manifestations of the reproductive cycle. With the lower animals the important events of ovulation and mating occur at the height of œstrus. In the human female ovulation has no such sex significance and mating is not limited to the period of ovulation. Other factors, such as the influence of climate and nutrition, must also be considered. Of great importance also is the psychological aspect, which is minimal in animals but maximal in man. With the human being physical and psychical are so closely related that both must be considered in the manifestations of many disorders.

Real results were impossible with the crude extracts first used. More success can now be expected, but it must be admitted that something is still lacking, and the clinician must impatiently await further help from the laboratory workers.

Mere injection of extracts, however pure, will never succeed until it is recognized that an accurate case history must be taken, while failure to make an exact physical diagnosis is also responsible for many disappointments. Mechanical factors, such as malpositions, inflammations and tumours or general disease, must be excluded or corrected before endocrine treatment is commenced. The upset in endocrinal mechanism may involve any one of the ductless glands. Therefore, in addition to a careful history and clinical examination, we may require the use of laboratory methods, such as blood hormonal content studies, the estimation of the basal metabolic rate, and in some cases X ray examination of the *sella turcica*.

Amenorrhœa.

It must be emphasized that the use of any preparation of œstrin can affect changes in the uterus only and has little or no effect on the ovary itself. Therefore its value in cases of primary amenorrhœa has been very problematical. It is possible by the use of large doses to bring a hypoplastic uterus up to normal size and to induce hyperæmia in a hypertrophic endometrium. Possibly from overdosage or a cessation of injections some bleeding will occur, but this is not true menstruation, for the luteal phase is absent. In any case the injections have to be repeated every month, and as the ovary is not affected, the chance of normal ovulation is slight. The use of gonadotropic hormone to promote luteinization has proved valueless in such cases and the outlook at present is not promising.

With secondary amenorrhœa the results obtained are more favourable, because comparatively small doses apparently may act as a stimulus to the mechanism controlling the cycle. Many workers have combined the pituitary-like hormone from the urine of pregnancy—"Antuitrin *S*" with the follicular hormone in doses of theelin, 100 rat units every four hours for nine days, followed by a similar dose of "Antuitrin *S*" at twelve-hourly intervals for five doses. Others employ similar doses daily for a fortnight followed by an interval of two weeks. In many cases thyreoid extract still remains the sheet anchor of treatment of functional amenorrhœa, especially if the basal metabolic rate be lowered. Progress in treatment may be confused by the fact that the amenorrhœa is sometimes associated with an excess rather than a deficiency of follicular hormone in the blood.

In young women more information is still required regarding the possible effect of inhibition on the primordial follicles of excessive doses of

hormones given over a long period, and Hartmann in particular warns of the possible untoward consequences of such hypertherapy.

Functional Uterine Hæmorrhage.

The condition described as *"metropathia hæmorrhagica"* gives a characteristic clinical picture of the effect of imbalance of the ovarian hormones. Histological examination of the endometrium shows marked hyperplasia with cystic enlargement of the glands giving the appearance of a Swiss cheese pattern. The ovaries show a persistence of unruptured follicles with an absence of *corpora lutea*. The picture is one of a hyperœstrus state, the result of a continuous effect of œstrin producing the proliferative non-secretory stage and a complete failure of production of progestin. Many cases develop early after a pregnancy and may be caused by the large amount of follicular hormone present in the later phases of pregnancy. Novak notes that during pregnancy there is a marked hypertrophy of the anterior lobe and considers that there is an occasional hang-over of the pituitary and the secondary ovarian factors, which thus cause hyperplasia and bleeding. The thyreoid may play a part in this imbalance, but the rôle of the pituitary is more important.

The rational treatment would appear to be the administration of the luteinizing factor contained in the urine of pregnancy. Novak reports encouraging results with "Antuitrin *S*"—200 rat units for two to five days. This is commenced at the onset of bleeding in the periodic type of hæmorrhage or when the patient is first seen if the hæmorrhage be irregular. By this means rapid luteinization is induced in the persistent follicles, and the endometrial cycle is thus completed, with the formation of the progestational type of epithelium. This treatment is particularly applicable to cases of excessive hæmorrhage near puberty, when the use of radium is inadvisable.

Menopausal Disturbances.

The follicular hormone should not be used during the first stage of the menopause, when the œstrin secretion is high, but should be reserved for the second stage, when deficiency is established. The vasomotor symptoms then in evidence are frequently alleviated with theelin, 50 to 100 units, given on alternate days for six doses and repeated if necessary. Attention to hygiene and diet, cessation of worry, and the use of sedatives are probably of equal importance.

Dysmenorrhœa.

Most investigators report very disappointing results in dysmenorrhœa. However, recent work by Novak and Reynolds may mean an important advance. They contend that, whatever may be the underlying cause of primary dysmenorrhœa, the actual pain results from spasmodic contractions of the uterine muscle. In animals uterine rhythmic contractions exhibit definite variations correlated with the various sexual states. Œstrin is responsible for uterine motility, while progestin causes quiescence. This inhibition of motility is also produced by the anterior pituitrin-like hormone of the urine of pregnancy. Novak believes that the uterine contractions are due to the result of withdrawal of luteal activity and renewed ascendancy of the follicular hormone. The latter is in greatest concentration during the premenstrual period and is the only known excitant of rhythmic uterine contractions. In other words, during the phase of luteal activity, from ovulation to a few days before menstruation, progestin inhibits œstrin. To explain why all women do not suffer from dysmenorrhœa two suggestions are offered. One is that exaggerated uterine motility is registered as pain only in those women whose pain threshold is lowered by various factors. According to the other, there must be in some women an imbalance between the two antagonistic hormonal principles, either quantitative or chronological. As regards treatment, the immediate concern is relief of the pain by the use of hot applications and coal tar sedatives. While atropine is a good antispasmodic, Novak expects better results from injections of "Antuitrin *S*" for several days before the period and repeated for a similar period. The factor of hypoplasia noted in many cases can be helped by theelin, 50 units on alternate days for a week commencing just after the period, that is, during the follicular phase. Naturally, general hygienic measures must also be taken.

Sterility.

If the sterility be not due to the male or to mechanical and inflammatory conditions in the female, hormonal disturbance may be the responsible factor. Frank has shown that the majority of menstruating sterile women have either a subthreshold œstrin blood cycle or a negative blood condition with the urinary cycle present. If the sterility be associated with amenorrhœa, it is explainable by the hormonal changes of the latter condition. Success has been reported with œstrin treatment, but more work remains to be done before the matter is finally settled.

Frigidity.

If animal results could be applied direct to women, hormonal therapy would be specific. But in most of these cases of frigidity there is a strong mental factor which endocrine extracts will not affect.

Threatened and Habitual Abortion.

Successful results have been reported by Bourne following the use of "Antuitrin *S*" in doses of 100 units twice a week up till the fifth month or longer in cases of habitual abortion. If the condition be one of threatened abortion, the pregnancy may be carried on by the injection of 100 units for several days.

Pelvic Inflammatory Conditions.

The injection of prolan causes marked hyperæmia of the pelvic genitalia and has been used by Klein

and Zondek in the treatment of chronic inflammatory pelvic conditions. They claim rapid alleviation of pain and a shortening of the course of the disease.

Gonorrhœal Vulvo-Vaginitis.

Lewis has reported the value of small doses of theelin in the treatment of gonorrhœal vulvovaginitis in young children. The object is to stimulate the growth of the vaginal and cervical epithelium so that these tissues may more readily recover from infection and prevent the gonococci penetrating deeper into the tissues. If his claims be substantiated, it will mark a decided advance in the treatment of this distressing condition.

Hormonal Abortion and Sterilization.

Theoretically, if the normal relationship between the ovarian hormones be disturbed, it should be possible to neutralize or at least diminish the effect of either hormone. Provided a sufficient dose of œstrin be given, the physiological changes associated with the embedding of the ovum should be disturbed and lead to abortion. Results so far have been unsuccessful and probably the necessary dose is much greater than any used so far. Similarly, if implantation could be prevented by the hyperadministration of one hormone, a condition of temporary sterilization would be attained. Allen has shown that in the rabbit complete abolition of the luteal phase is possible, but an equivalent amount for the human uterus would require a dosage of the order of two or three million mouse units.

On the whole the results described have not been very promising. However, recent research has led to a more critical discrimination between subjective and objective results than was noted in the past. With the cooperation of the laboratory workers we are slowly building up firmer foundations for future study and saner therapy. Novak put the position very well when he stated:

> So long as we recognize this dependence, and so long as we are willing to follow the line of scientific march rather than cavort ahead of it, we may perhaps be pardoned for an occasional display of over-enthusiasm.

Keeping this in mind, may the time soon come when we can reach across the rainbow and grasp that alluring and elusive pot of gold at the other end for the ultimate benefit of our patients.

LOCAL ANÆSTHESIA: ITS APPLICATION TO THE REDUCTION OF FRACTURES OF LONG BONES AND DISLOCATIONS OF JOINTS.

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WHILE I was a resident medical officer of the Balmain and District Hospital I had ample opportunity of practising the method of reducing fractures and dislocations under local anæsthesia, and I propose to report and discuss the outstanding results and methods that I used.

In this series of cases I used four methods of treatment: (i) local infiltration into the blood pool between the fragments, (ii) subperiosteal infiltration, (iii) transverse block of the limb above the site of injury, (iv) infiltration of nerve plexuses.

Further, I have used two solutions in this series which I propose to compare: (i) "Novocain", 2%, or "Planocaine", (ii) "Novocain", 2%, or "Planocaine" with the addition of adrenaline chloride, 1 in 150,000.

Before discussing methods, solutions, or cases, I wish to enumerate the types of cases treated with this method of local anæsthesia and to discuss technique and armamentarium.

Types Treated.

The types of fractures and dislocations treated are set out in Table I.

TABLE I.

Injury.	Number of Cases.
Fracture of the shaft of the humerus	6
Fracture (supracondylar) of the humerus	11
Fracture of both bones of the forearm	61
Fracture of the femur	5
Fracture of the shaft of the tibia and fibula	14
Pott's fracture	8
Fracture of the ankle with posterior displacement of the foot	2
Dislocations of the shoulder joint	3
Dislocations of the elbow	2
Dislocation of the radius at the distal radio-ulnar joint	1
Total	113

Technique.

1. Carefully palpate the limb to determine the site of the fracture, and mark the approximate site with skin ink or other means.

2. Prepare the skin with ether and spirituous solution of biniodide of mercury, 1 in 500.

3. Make a skin wheal first and then pass the needle until it reaches bone or until blood can be drawn back into the syringe. If the blood pool is not reached at first, one can usually feel along the bone gently with the needle until the end of a fragment is felt.

4. Inject up to thirty cubic centimetres of solution, varying the amount according to the size of the patient and the site of fracture.

Having finished the injection, spend a few minutes in getting everything ready to complete the reduction, as it takes from five to ten minutes for the anæsthetic to produce its best results. At this stage it is most important to support the limb and to immobilize it as much as possible as, with the absence of pain, movement may take place and so convert a simple into a compound fracture.

A remarkable feature is noticeable when the injection is complete, this being the rapid recovery from nervous shock and fright.

Reduce all fractures as soon as possible after the injury. If some time has elapsed and the limb is becoming œdematous, perform a transverse block of the whole limb, well above the limits of the

œdema. Above all, be gentle, as sudden movements disturb the patient. In all of the major fractures I found ample premedication to be absolutely necessary.

Armamentarium.

I usually employ a glass syringe of twenty cubic centimetres capacity, fine needles 5·0 centimetres to 7·5 centimetres (two to three inches) in length, capsules containing 0·6 gramme each of "Novocain" or "Planocaine", solution of adrenaline chloride 1 in 1,000.

One capsule of "Novocain" added to thirty cubic centimetres (one fluid ounce) of sterile water or, preferably, sterile normal saline solution, makes a 2% solution approximately. To this is added 0·18 cubic centimetre (three minims) of adrenaline chloride solution.

Methods Used.

1. In eighty-one of these fractures I injected directly into the blood pool. In twenty I used "Novocain" alone and found that the anæsthesia was very satisfactory, but that the effect was not as lasting, as the patient complained of pain in from three to eight hours. This seems a long time, but I think that this may be explained by the fact that stasis takes place in the blood pool and that absorption is slow at any time. In the sixty-one patients who had "Novocain" *plus* adrenaline, the anæsthetic effect was more prolonged, freedom from pain being from eight to eighteen hours.

2. Infiltration about the periosteum was used in twenty-four of these cases, principally in fractures of bones of the forearm, owing to the difficulty in locating the blood pool and in young children who were difficult to control while the pool was felt for. Still, in these cases I found that anæsthesia was excellent, with compete relaxation, although one was obliged to wait a little longer for the full effect.

3. Transverse block of the whole limb was used in two cases owing to the limb being œdematous. Both of these cases were fractures of the shaft of the tibia and fibula, and in both the limb was blocked above the knee. The relaxation was most pleasing in both instances.

4. Infiltration into the brachial plexus was used on the dislocations of the shoulder joint. In one case infiltration around the joint alone was used, but relaxation was not all that could be desired and the plexus was then blocked, with a perfect result.

Some of the Cases.

Some of the cases may be described as follows:

One of the patients with a fracture of the femur was a youth of nineteen years who had been knocked down by a motor car and who had sustained a fracture of the right femur in the middle third, with about 1·8 centimetres (three-quarters of an inch) of shortening. He was given premedication as soon as he was admitted, as follows: (i) Hypodermic injection of morphine sulphate, 22 milligrammes (one-third of a grain), (ii) hypodermic injection of hyoscine hydrobromide, 0·6 milligramme (one one-hundredth of a grain), one and a half hours before the time of reduction. This produced a deep narcosis and the reduction was satisfactorily performed. Respirations dropped to twelve per minute and the pulse rate increased to ninety-two per minute. The patient slept throughout the whole of the manipulations, and the closest questioning elicited the fact that he felt no pain for several hours.

I think that one of the most outstanding characteristics of local anæsthesia was exhibited in this case. As there was a good deal of shortening, 20·25 kilograms (forty-five pounds) in weight were applied skeletally for extension. Within forty-eight hours the shortening had disappeared and a slight degree of lengthening was present. I explain this as follows: With all fractures there is an immense amount of soft tissue damage causing pain, which in turn causes the parts to protect themselves by inducing spasm of the muscles. The anæsthetizing of the nerve endings removes the cause of spasm and the extension weight is now acting on normal muscle tone. As anæsthesia is present for a considerable number of hours, the extension is able to cope with the shortening during the period of anæsthesia. This is a description of a typical case.

Of the patients with fractures of the tibia and fibula, all had premedication, and in this group I had what was my first failure.

The fracture was some hours old and there was a good deal of œdema present. As it was early in my experience, I followed the method of injection into the blood pool and when the manipulations were commenced the patient writhed with pain, and a general anæsthetic was resorted to in order to complete the manipulations.

Later experience has shown me that, had I blocked the limb well above the site of the fracture and the œdema, the reduction would have been successful.

In one of these cases another great feature of local anæsthesia was demonstrated.

The patient had a fracture of both bones of the leg in the lower third. It was reduced by this method and the leg was placed in a plaster cast. The following day X ray examination revealed that there was posterior displacement of the lower fragments. The site of fracture was injected under the fluorescent screen, the fracture was manipulated and plastered, the screen being used for control. The leg was held for about half an hour until the plaster was hardened sufficiently to prevent further slipping of the fragments.

In another of these cases there was delayed union.

The patient had a transverse fracture of both bones of the leg which was reduced under local anæsthesia. After four months there was practically no union. He was apparently healthy in all respects, had a normal blood count and picture, and gave no reaction to the Wassermann test. At the end of seven months he had a slight amount of union, and at the end of twelve months union appeared to be firm.

I do not think that this patient's non-union can be credited to the use of local anæsthesia and I am of the opinion that his union would have been delayed in any circumstances.

Of the fractures of the forearm, I have reduced all types. Colles's fractures were all reduced by injection into the blood pool, those of the shaft of the radius and ulna mostly by subperiosteal infiltration. All have been successful from the point of anæsthesia, but in one case the results were disappointing.

The patient had a fracture of both bones of the forearm, just above the wrist joint, the fracture of the radius being oblique and extending into the joint. Reduction resulted in an excellent position and the arm was put up in back and front aluminium splints. Three weeks afterwards the back splint was removed and the patient was sent for massage. At the end of the week he was referred back to me for a deformity of the wrist joint. X ray examination revealed that the radial fragment had slipped and was displaced about 2·5 centimetres (one inch) up the shaft. Manipulation under general anæsthesia corrected the deformity and the arm was plastered and the end result was good.

In this group of patients the youngest was three years and the oldest seventy.

In this group the amount of solution used varied from two cubic centimetres in the three-year-old child to ten cubic centimetres in a navvy with an immense forearm.

In fractures of the forearm it is essential to inject both bones, into the blood pool where possible, or subperiosteally if the blood pool cannot be located. The solution is divided into equal parts.

In all the fractures above the condyles of the humerus I injected directly into the blood pool and into the surrounding tissues as a complete block. All were reduced quite easily and were put up in complete flexion, a cuff and collar being used.

Of the fractures of the shaft of the humerus, there were two with markedly delayed union, but as this is a common sequel of these fractures I do not think that the non-union could be ascribed to the method of reduction.

In the dislocations of the elbow joint I used an infiltration of all the tissues around the joint and an injection into the joint itself. I used twenty cubic centimetres of solution around the joint and ten cubic centimetres into the joint. Reduction was simple and the arms were put up in flexion.

When reducing dislocations of the humero-scapular joint, I was struck by the ease of reduction experienced.

In one case I injected the brachial plexus, using the following method: (i) Locate the subclavian artery as it rises above the clavicle. (ii) Select a point just lateral to the artery, that is, about the middle of the clavicle; pass a needle towards the spine of the second dorsal vertebra. This brings the needle on to the first rib. Then inject about twenty cubic centimetres of solution of "Novocain", 2%, and adrenaline chloride, 1 in 100,000. This infiltrates the brachial plexus.

In this case I found that the relaxation was sufficient to reduce the dislocation, but that relaxation could have been better.

In the next case I again infiltrated the brachial plexus and also performed a local infiltration of the tissues about the joint. Reduction was so easy that manipulation was hardly necessary, as the humerus slipped into position.

In the third case I infiltrated only the tissues about the joint and found that the relaxation was poor, so that later I infiltrated the brachial plexus as well.

The youngest patient treated by this method was a child of five years, and the oldest a man of seventy-two years.

Advantages to the Surgeon.

The advantages to the surgeon of the use of this method are as follow:

1. In no fracture need a medical practitioner wait for a colleague to give an anæsthetic.
2. Relaxation is perfect.
3. Perfect relaxation allows of more and freer manipulation.
4. Absence of pain and spasm is a potent factor in the extension of a shortened limb.
5. The time factor becomes unimportant, as a fracture may be reduced, the patient may be sent for X ray examination and, if the position is not satisfactory, further manipulations can be carried out owing to the prolonged anæsthesia.
6. If still more time is required, a further injection can be given and several hours of anæsthesia can be gained.
7. Local anæsthesia can be administered to patients of all ages, from the youngest to the oldest, without risk and without consideration of their physical condition or whether they are suitable subjects for general anæsthesia or otherwise.
8. The extraordinary rapidity of recovery from shock is an enormous factor in favour of this method and is of immense value to the surgeon.

Advantages to the Patient.

The advantages to the patient in the use of this method are as follow:

1. The ever-present dread of anæsthesia is eliminated.
2. The after-effect of anæsthesia (general) is absent and the patient is more comfortable.
3. Pain is absent for hours.
4. Anæsthetic risk and shock are done away with, and these are an ever-present risk even in the most expert hands.

Conclusions.

1. In treatment of fractures by this method I think it is preferable to make the injection into the blood pool between the fragments when possible, as the absorption is slower and the effect more pronounced.
2. Subperiosteal infiltration is suitable in selected cases when difficulty is experienced in finding the blood pool.
3. When œdema is present the best method is to perform a transverse block of the while limb well above the level of the œdema, as œdematous tissue is extraordinarily painful.
4. Use ample premedication in fractures which require a lot of manipulation, especially those of the femur and of the tibia and fibula.
5. The use of adrenaline chloride appears to give better results, as the patient does not feel pain for many hours after the reduction, because of the slower absorption.
6. If traction is to be applied, premedication is essential, whether the traction be applied to the skin or skeletally.
7. In the treatment of dislocations in this way the ideal method is infiltration of the nerve plexus combined with local infiltration of the tissues around the joint.

Acknowledgement.

I should like to take this opportunity of thanking Dr. Cyril E. Corlette for his kindly interest, help and inspiration in the carrying out of this series of cases and for his very helpful suggestions in the use of different methods and solutions.

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PERTUSSIS VACCINE.

By HILDA BULL, B.Sc., M.B., D.P.H. (Melbourne),
(From the Office of the Medical Officer of Health, City of Melbourne.)

IN view of the existing doubt as to the value of pertussis vaccine both in the prophylaxis and treatment of whooping cough, an attempt has been made in two institutions to test it with controls, each child who received it being paired with another child of similar age and circumstances who did not receive the vaccine.

Institution number 1 is a home for infants up to two years of age and housing 33 infants. Whooping cough had already been severe among the older infants, but a ward of 16 babies under twelve months of age was unaffected, and these were divided into two groups of comparable ages.

Vaccine was administered at four-day intervals in doses of 500, 1,000, 2,000 and 4,000 millions to infants under six months, and doses of 1,000, 2,000, 4,000 and 8,000 millions to those over six months of age. Of these 16 children, two failed to develop any cough; and of these, one was inoculated and the other was not inoculated. The remaining 14 children developed coughs, which began to appear about three weeks after the date of the first inoculation.

In five pairs of infants, though all developed some symptoms, the balance was decidedly in favour of those who received vaccine. Only one bad case developed among the inoculated, while there were four severe and prolonged attacks among the unprotected. Six of the uninoculated children developed definite whoops, whilst among the inoculated children only two developed any whoop, and one was very mild.

Institution 2 is a children's home accommodating about 40 children of ages two to fourteen years, but very few are admitted under the age of four. As the entrance age is high, history of previous infections is rarely obtainable and cannot be regarded as accurate; so that, though children reasonably believed to have had pertussis were excluded, there were probably others who were immune through previous attacks.

Three children were recognized as whooping and many others had colds on a certain date. Four days later an experiment with vaccine was attempted. Exposure of children was general in the institution and there was no attempt at isolation. The children were paired as well as possible.

Excluding those already whooping, there were nine pairs of children who already had coughs or signs of colds, and nine pairs without any cough or symptoms.

Pure pertussis vaccine was given in doses of 1,000, 4,000 and 8,000 millions at four-day intervals. Among the pairs of children already coughing vaccine was given to the child showing greater severity of symptoms, where such discrimination was possible. This was done in order to avoid giving vaccine to those who were more likely to be already immune.

Among the pairs originally showing symptoms, seven of the nine inoculated children developed whoops, but only one case was at all severe, the rest being mild and of short duration. Among the uninoculated, five were apparently immune and the other four developed definite whooping cough, two of these cases being very severe.

Among the nine pairs who originally showed no symptoms, only one case of whooping cough developed in a child who had not been inoculated. This case was the most severe and prolonged in the institution. The three children who had begun to whoop four days before the experiment was undertaken also received the same doses. In two of these the treatment appeared to lessen the severity; the third was already very ill, and as he showed no improvement, the vaccine was discontinued after the second dose.

Comment.

Pure pertussis vaccine in doses at four-day intervals of 1,000, 2,000, 4,000 and 8,000 millions produced no reactions at all, even in infants under six months.

Given prophylactically at about the period of exposure to infection, it did not prevent the appearance of symptoms among young infants, but appeared favourably to affect the course of the disease.

In a group of older children, when it was administered at about the onset of the disease, it appeared in some cases to modify its course.

The estimations of the severity of the attacks, upon which the above statements are based, were made by the staff of the institutions concerned, who kept notes of the progress of the children. It is unfortunate that members of the staff knew which children were inoculated and which children were not inoculated. This knowledge may have influenced their opinion.

Future experiments will be arranged, if possible, in such a manner as to eliminate this additional factor of uncertainty.

A RADIUM COLPOSTAT.

By SYLVIA BRAY, M.B., B.S. (Sydney),
Radium Registrar, Sydney Hospital, Sydney.

THE accompanying figures illustrate a very useful and compact piece of apparatus which I have devised for applying radium to the vaginal fornices.

It is composed of two rubber corks with a hole bored through the centre of each to hold the radium tube. A piece of copper wire 10·0 to 12·5 centimetres (four to five inches) long, of such gauge as to be rigid but easily bent, is placed around the centre of each cork, fitting into a shallow groove cut in the cork. The greater part of the loop of wire is covered by thin rubber tubing. When the radium

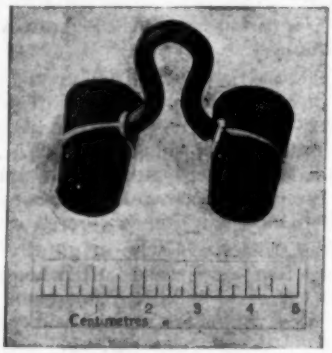

FIGURE I.

tubes are inserted, they and the corks are covered with fairly thick rubber dam to cut off the secondary irradiation from the metal encircling each cork.

The apparatus can be bent very readily to any desired shape or position, and is small enough to be introduced into the vagina easily; also it can be kept accurately in position by packing gauze firmly

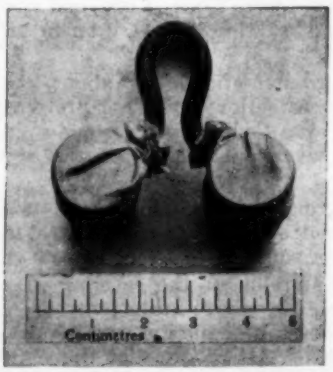

FIGURE II.

above and below the connecting wire. It has the added advantage of costing but a few pence and can be made by anyone in a few minutes.

In this case two bored rubber corks were used, such as are used for drop anæsthetic bottles, and 10·0 or 12·5 centimetres (four or five inches) of tinned copper wire, obtained by stripping electrical flex of its covering. Corks of varying thickness and length may be used to fit the different sized radium tubes. Also different gauge wire may be used, or even two thicknesses of finer wire.

For irradiating the four fornices at once, two of these applicators may be connected (at right angles) to one another by the wire.

Reports of Cases.

PHRENIC AVULSION.

By W. J. NEWING, M.D.,
Physician Attending In-Patients, Saint Vincent's, Hospital, Melbourne.

THE lack of incident associated with avulsion of the phrenic nerve in the great majority of instances is inclined to mark the operation as one attended with a minimum of danger. But two fatalities occurring during the past year following closely upon the operation prompt the publication of these notes and a short discussion of the complications that sometimes occur.

Case I.

The first case was that of a labourer, aged fifty years, suffering from bronchiectasis of the right lower lobe, from which he evacuated daily about 120 cubic centimetres (four ounces) of three-layered, offensive sputum. The bronchiectasis was demonstrated by lipiodol injection to consist of a number of saccular and cylindrical dilatations. The tubes on the left side were very slightly dilated. Phrenic avulsion was decided upon and seven centimetres of the nerve were removed without difficulty. The following day the patient commenced to vomit his food, and so persistent did this become that he wasted rapidly. An extreme degree of emaciation resulted, and about ten weeks after the operation a bronchopneumonia caused death.

Post mortem examination revealed the right diaphragm to be definitely raised above the level of the left. The tubes on the right were dilated and filled with purulent, offensive material; no explanation of the persistent vomiting was found.

Case II.

The next untoward result occurred in a young woman of twenty-three years, whose right lung had been under compression for two years for tuberculosis. Obliterative pleuritis had occurred following a small effusion of fluid. Creeping of the pleura had commenced from below upwards, with the result that reexpansion of the lower lobe was taking place, with a recurrence of cough and sputum. Phrenic avulsion was performed in preparation for thoracoplasty, and fourteen centimetres of the nerve were removed without difficulty. Hæmoptysis (sixty cubic centimetres or two ounces) supervened the following day and kept recurring until her death, which occurred on the fourteenth day. No *post mortem* examination was available.

Discussion.

Digestive upsets, fainting and other minor complications occur quite commonly following phrenic avulsion. Injury to and paralysis of the cervical sympathetic have been reported many times. Morriston Davies mentions three cases of sudden death due to the vagus being mistaken for the phrenic. Cassidy and Lee (*The British Medical Journal*, October 14, 1933, page 684) reported a case of death following immediately upon clamping of the nerve preparatory to its removal. *Post mortem* examination

revealed the main bronchi to contain much pus, and they concluded that death was due to asphyxia caused by the sudden flooding of the lung from the bronchiectatic cavities when the diaphragm made its rapid ascent.

The most troublesome complications, however, are those exemplified by the two cases here reported, namely, vomiting and hæmoptysis. The usual explanation offered is that they are due to the sudden rising of the diaphragm following removal of the nerve. From repeated fluoroscopic observations of these cases following operation, I am convinced that this is not the cause. The immediate rise of the diaphragm is never more than three centimetres, and often quite negligible, several months elapsing before it finally reaches its maximum height. It is difficult to believe this could cause flooding of the lung. Vomiting is even more difficult of explanation; it occurs in right-sided cases as well as left. Some ill-understood physiological relation between the vagus and phrenic nerves is much more likely to be a factor in the causation of both vomiting and hæmoptysis than the mechanical disturbance caused by a rising diaphragm. What with these often serious complications and the frequent technical difficulties encountered, phrenic avulsion is not an operation to be undertaken lightly.

RUPTURED VERMIFORM APPENDIX AND MECKEL'S DIVERTICULITIS.

By R. W. H. MAFFEY, M.B., Ch.M. (Sydney),

AND

R. ERROL MAFFEY, M.B., B.S. (Sydney),

Singleton, New South Wales.

THE following case is recorded because of the ultimate difficulties of differential diagnosis and its association with the anatomical findings in the abdomen.

Clinical History.

A male, aged five years and nine months, first seen at 12.30 p.m. on January 8, 1934, had been seized with sudden generalized abdominal pain at 11.30 o'clock on the previous night. Vomiting commenced shortly afterwards, and later the pain became localized to the right side of the lower part of the abdomen. The child's mother administered castor oil and an enema, which was followed by a free action of the bowels. A history of previous "bilious attacks" was obtained.

On examination, the tongue was coated and dry, and the breath heavy; the child's temperature was 38° C. (100·4° F.), the pulse rate was 132 and respirations numbered 24 per minute. Palpation of the abdomen revealed tenderness and rigidity in the right iliac fossa, and also some slight tenderness in the right costo-vertebral angle. Tenderness was elicited on the right side by rectal examination. The obturator and psoas tests gave no positive information. Examination of the heart, respiratory system and urine revealed no abnormality. The diagnosis of acute appendicitis was made and the child was sent to the Dangar Cottage Hospital for operation.

At about 2 p.m. he was found to be drowsy and delirious, with a temperature of 39·6° C. (103·4° F.), a pulse rate of 130 and respirations numbering 40 in the minute. The chest was reexamined, but no abnormal sign was detected. Marked tenderness was observed on palpation of the right hypochondrium and the right iliac fossa. The child's general appearance now strongly suggested pneumonia, and Dr. H. L. Stafford was asked to see him in consultation. In view of the strong evidence in favour of acute appendicitis found at the first examination, and of the absolute absence of morbid signs in the lungs, it was decided to explore the abdomen. Chloroform-ether mixture was administered by Dr. Stafford, and the abdomen was opened through a gridiron incision in the right iliac fossa. A small amount of purulent fluid was encountered on incising the peritoneum. In searching for the appendix, a Meckel's diverticulum, about 5·0 centimetres (two inches) in length, definitely inflamed, was found and removed. Considerable difficulty was then experienced in locating the caecum, which was eventually discovered lying immediately beneath the gall-bladder, with the appendix, gangrenous and ruptured, behind it and firmly adherent to the posterior abdominal wall. The wound in the parietes was extended in order to give better access to the appendix, which was then dealt with in the usual manner. A drainage tube to the right kidney pouch was inserted through a stab wound in the flank. The temperature, pulse, and respiration rates gradually came down to normal in the ensuing three days, and convalescence was comparatively uneventful. The patient was discharged from hospital in good health on February 5.

Comment.

1. Had the patient been seen for the first time two hours later, a diagnosis of pneumonia might quite easily have been made.

2. The proximity of the gangrenous appendix to the diaphragm apparently set up irritation of that structure which led to simulation of a lung condition.

3. The early reference of pain and of tenderness on palpation to the right iliac fossa, and the later demonstration of tenderness over the actual site of the appendix, presumably due to the local irritation of the peritoneum following rupture, are points of particular interest. The fact that an inflamed Meckel's diverticulum was lying in the right iliac fossa must, of course, be remembered in considering the tenderness present at that site.

A CYST OF THE PANCREAS.

By P. SYDNEY HUNT, M.B., Ch.M. (Sydney),

Honorary Surgeon, Royal South Sydney Hospital.

Clinical History.

C.D., A FEMALE, aged fifty-six years, was admitted to the Royal South Sydney Hospital on February 12, 1934, suffering from pain in the left side of the abdomen, vomiting and acute constipation for the past two days.

On examination her temperature was 38·3° C. (101° F.) and the pulse rate 118 per minute. She had a very dirty tongue, the abdomen was slightly distended and tender on deep palpation over the entire left flank, more marked in the left iliac region. Vaginal and rectal examination revealed no abnormality, except for a small scybalous mass in the rectum. Three enemata were given and with the third a large evacuation was obtained. Tenderness was still present in the left iliac region, but her abdominal distension disappeared. She was accordingly left for further special examinations. A provisional diagnosis of sigmoid carcinoma or an acute diverticulitis was made. A barium enema revealed no sign of either lesion, and her further treatment was purely symptomatic and expectant; she vomited occasionally and her pain persisted.

Some days later there was a slight hæmatemesis of a "coffee-ground" appearance and the pain moved to the epigastrium. There was now a distinct feeling of distension in that region, but no definition of a tumour. A pathological condition of the pancreas was then suspected and an estimation of units of diastase in the urine was made. This showed 100 units, which would presuppose a pancreatic insufficiency. However, as the patient's condition was showing no improvement, exploratory laparotomy was decided upon.

At operation on March 2, 1934, the omentum was found to be studded with what appeared to be organized areas of fat necrosis, and there was evidence of an acute reaction of the serosa. In the region of the lesser curvature of the stomach was a transversely placed tense swelling. This was incised and about half a pint of clear fluid was removed with an aspirator. It was not possible to marsupialize the sac, so a large drainage tube was inserted and the wound was closed. The fluid was analysed and was reported to be consistent with pancreatic secretion. Drainage was free and averaged about half a pint daily. The tube was soon withdrawn, and after some weeks promised to become a chronic pancreatic fistula. A strict

anti-diabetic diet was then instituted and within two days the flow of pancreatic fluid had diminished by half and the area of excoriation which had existed around the wound began to clear up. The fistula then rapidly closed and the patient was discharged.

Comment.

The case thus presented some interesting features, as follows:

1. At first the condition appeared to be one of acute intestinal obstruction.

2. Subsequent hæmatemesis of doubtful ætiology occurred.

3. A pancreatic insufficiency test apparently gave a positive result.

4. The apparently rapid response of the fistulous track to a strict anti-diabetic diet.

Of course the doubt remains as to whether there will be a reaccumulation of fluid, but the patient has been instructed to maintain her diet with modification, and if this is done the prognosis appears hopeful.

Acknowledgement.

I am indebted to Dr. Skipton Stacy and Dr. Raymond Green for their advice and assistance in this case.

Reviews.

EXTREME PSYCHOLOGY.

"EXPLORING THE UNCONSCIOUS" is a compilation of addresses and articles by Dr. George Groddeck, of Berlin, on subjects which range from the psychology of Faust and Peer Gynt, an autobiography, animal behaviour, to constipation in children.[1]

The book is provocative of thought, and the author's own view is that "I am perfectly aware, of course, that my opinions are heretical, that they run counter to the axioms of medical training, but I cannot change them because of that". The main theme of the work centres about the abdomen and respiratory organs as being the possessors of a mind comparable to, though simpler than, the head or brain mind. As an example of an abdominal emotion may be cited the pleasant and unpleasant feelings associated with digestion and excretion. In the author's opinion the conflict between the units of this mind trilogy are responsible for many morbid states. In order to understand Dr. Groddeck's viewpoint, it is essential to realize that he is both a medical man and a masseur. He observes abdominal folds as being as useful as facial wrinkles in elucidating underlying psychological states. To him the outward shape of the belly is as important as that of facial expression. He divides people into upper, mid, and lower belly types, in a manner reminiscent of the dogmatism of old phrenologists, who ascribed mental attributes as related to skull topography.

The conventional physician may think he is on sounder ground when describing the rationale of constipation, which he considers due invariably to psychic causes. Only occasionally aperients are used in his practice. It says much for the author's belief in his own theories, and his ability to handle patients, that he has withheld purgatives for thirty days, after which "there was an easy and not excessive evacuation".

The views on dietetics are equally unorthodox, as may be judged by the following quotation: "As I can see it, all that is talked and written about dietetics and nutrition is just pure twaddle so long as one does not take heed of the decisive factor, the human being who takes in the nourishment and who often enough has a hidden, repressed, unconscious attitude towards what he eats and drinks."

Whilst many will agree that dietetics is in its infancy, it is questionable if many will so whole-heartedly claim psychology as the key to the riddle of food values.

Enough has been written to illustrate the unorthodox views of the writer. That he swings the pendulum too far in favour of psychology is obvious, but at least he is sincere. The most valuable lessons which emerge from reading his method of exploring the unconscious is that an alliance between massage and clinical medicine creates a strong transference of great curative value, and that even organic diseases, such as cancer, have a psychological approach. Much can be done in the alleviation of avoidable pain by a correct use of psychotherapeutic measures. The old-fashioned practitioner will find a confirmation of the views that a keen sense of smell is a valuable adjunct to the clinical armoury. The ubiquitous "body odour" is recognized by this observer to vary with the psychic state. Truly the ramifications of medicine and psychology lead us into strange fields!

ANIMAL TYPES.

THE production (including the publication) of university text books in Australia is worthy of encouragement, especially in these difficult times, when anything from Europe or America is taxed initially by the rate of exchange. In some subjects, however, and most especially zoology, botany and geology, there are far more serious and obvious reasons for Australian text books. The "Anatomy of Animal Types", by Dr. E. A. Briggs, is an attempt to produce a practical introduction to zoology for students in Australia.[1]

By a gradual process of evolution the generally recognized first course in practical zoology consists in a study of certain animal types. The frog and the sting ray, the crayfish and the cockroach have thus become immortalized all over the world. Unfortunately, the common frogs of different countries belong to diverse genera and are not quite the same anatomically, and the same thing applies to the rays and crayfish and other creatures which lend themselves to a use the extent of which is undreamt of by the uninitiated.

It is to meet this difficulty that Dr. Briggs has selected and described Australian types, and to make his book a more complete guide he has also included those essential types, the parasitic protozoa, the liver fluke, the mosquito, snail and rabbit *et cetera*, which are at home over a far wider range of the earth's surface.

The book is an excellent guide for practical classes. It is clearly set out, the print being well chosen to emphasize important points or laboratory instructions (in italics). There is a refreshing up-to-dateness about details of function. The style is clear, and as a matter of fact merits a special word of praise for the directness of the descriptions and the ease with which the instructions may be followed. But this is essential, because the book is without illustrations. They have been left out intentionally. Evidently the author has suffered from generations of students who, instead of drawing what they saw, have committed to memory excellent pictures of other people's artistic efforts. There are, of course, two views on this matter, but it is very difficult to choose between them, and each method has its successful exponents.

In view of the fact that medical students in embryo will probably be using this book in their practical classes, it might have been very useful to have pointed out in the introduction why the particular animal types had been selected and why such types are set for study at all.

It is surprising how many students fail to realize the purpose behind it all. And the traditions of the old days (before insect and other animal parasites were known to play such a part in human disease and before the complexities of Mendelian heredity were discovered) are still remarkable influences in framing their outlook. Things are very different, however, from the old days. The book should meet a considerable need in Australia.

[1] "Exploring the Unconscious: Further Exercises in Applied Analytical Psychology", by G. Groddeck, M.D.; 1933. London: The C. W. Daniel Company. Crown 8vo., pp. 224. Price: 7s. 6d. net.

[1] "Anatomy of Animal Types for Students of Zoology", by E. A. Briggs, D.Sc., 1934. Australia: Angus and Robertson. Demy 8vo., pp. 270. Price: 10s. 6d. net.

The Medical Journal of Australia

SATURDAY, AUGUST 18, 1934.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

MEDICAL EDUCATION.

As long as the world lasts and disease raises its grizzly head in the community medical education will remain a problem, keenly debated and unsolved. Conditions of social life are continually changing, new discoveries in medical science are being made, and both these factors make ever-fresh demands on the man who sets himself up to be a healer and an eliminator of disease. Obviously, if an ideal and stable social condition were reached, and if the mysteries of disease were no longer mysteries, the votaries of medicine could plan the training of its initiates and could allot to each his place in the protection of health. Unfortunately, history shows that medicine, or rather the teaching of medicine, has always lagged behind, both as far as the social condition of the people and scientific knowledge are concerned. It is probably correct to state that, though efforts have been made from time to time to amend medical curricula, attention has been devoted more to the changes called for by additions to knowledge than to those dependent on the social state. In several countries experts are trying to adapt medical education to present-day requirements, and these attempts merit the serious attention not only of those connected with universities, medical schools and hospitals, but also of the practising members of the profession. In several of the Australasian universities the medical curriculum has recently been amended and the changes have been reported in this and other journals. A report dealing with the whole problem has been published in the *Quarterly Bulletin of the Health Organization* of the League of Nations. This report has been drawn up by Dr. Etienne Burnet, of the Pasteur Institute, and has been sent by the Health Committee to the various national organizations that are considering medical education. Another document of the greatest importance is contained in the annual report of the Council of the British Medical Association. It is the work of the Committee on Medical Education and will be found in the supplement to *The British Medical Journal* of April 21, 1934. Since *The British Medical Journal* is in the hands of all members of the Association in Australia, the latter report is commended to the careful study of all our readers.

Dr. Burnet shows that difficulties are to be encountered at every step, that there are contradictions between which reform is hesitating, and which must be settled by eliminating one of the factors or combining them in a different way. He points out, for example, that medicine exists for the community, and asks whether it can perform its task otherwise than by a collective organization. (The subject of collective and individual medicine has but recently been dealt with in these columns.) He then refers to ideals and pecuniary reward. He sees in the result of tradition a somewhat vague and anarchical humanitarianism—the rich formerly paid more or less for the poor; he asks how the training of medical practitioners can be adapted to the changing conditions of society. On each of these points whole articles could be written. They have beyond question a bearing on medical education, and particularly on the motives actuating a would-be student of medicine. Now more than ever is there need for lofty ideals—the ideal of service and the love of humanity—and for a high standard of general education and culture among members of the medical profession. Dr. Burnet asks the pertinent question: "What type of doctor do we wish to produce?" His answer is: "The general

practitioner." To distinguish him from the old type of practitioner, Dr. Burnet would change the title to "the basic doctor"—"he is the least specialized, the most complete, and, from the point of view of the health of the individual and public health, the most essential and most authoritative of all the doctors . . . it is he whom the faculties should train by endowing him with basic knowledge". The British Medical Association report states that the primary object of the medical curriculum should be to "produce on its completion a practitioner who has acquired a right attitude towards professional duties and responsibilities, an ability to deal reasonably in the early days of practice with such patients and conditions as may confront him, and such basic knowledge and mental training as will enable him to profit continuously by daily experience". The report goes on to state that a medical curriculum should at the same time "constitute such a co-ordinated course of study as will by its mental discipline make the student a really educated person and not merely a skilled technician". This statement will show the high standard that is set up in the British Medical Association report; and it will be noted that the "basic practitioner" is also the objective in this instance.

Three aspects of the British Medical Association report call for emphasis. The first has to do with the statement that the object of a medical curriculum should be to make the student a really educated person. Of course this is an impossibility. We cannot take this statement in its literal sense. Education implies much more than can be attained in any six years' course, even though it be preceded by the most desirable schooling. It is stated that before registration the student should be required to have a sufficient knowledge of physics, of chemistry and of the general principles of biology. Later on he should, it is stated, undergo a further course of study that would include other subjects of general education, usually English language and literature, a foreign language, and perhaps history. To the word "perhaps" we take exception. In another part of the report stress is laid on the necessity for a knowledge of the German language; this will meet with the approval of all students of medical literature. The result of a course such as is laid down is stated in the following terms:

> Assuming that such a course was intelligently constructed and directed and seriously followed, the student should then at least know how to think, how to read with comprehension and reasonable fluency one language besides his own, and how to express himself, both in speech and in writing, logically and clearly in his own language. He would have been introduced to some great literature and have some notion of historical sequence and perspective. He would understand scientific method and scientific principles of observation and deduction; and he would have acquired such a knowledge of the main facts or problems of the physical universe and of living organisms as to enable him to pass to the study of the human organism and its environment with interest, intelligence, and profit.

In the British Medical Association report no stress is laid on the study of the classics. The classics must be acknowledged as the groundwork on which ability to think and on which culture can best be built. In Australia, if prospective students of medicine are to come to their medical schools properly prepared, attention will have to be paid to the teaching in the public schools and other pre-university teaching institutions. Unfortunately this part of the subject cannot be debated at length, but it may be stated that at many schools provision is being made for the teaching of chemistry and physics and even biology, and that this is sometimes done at the expense of teaching in the English language and the classics. Some of what are known as the Great Public Schools have not, or till quite recently had not, recovered from the crass stupidity of excluding the German language from their curricula, a stupidity indulged as a piece of war-time hysteria.

So much for the pre-university teaching. In the British Medical Association report considerable space is given to the teaching in the clinical years at a medical school and the general outline given is all that most experts will desire. On a previous occasion we have emphasized the need for teaching, not over-burdened with didactic lectures, that will stimulate thought and not rob the student of his independence or strangle his originality. We heartily approve all that has been written about the teaching of anatomy, especially in regard to demonstrations in the living subject of abnormal conditions of structure or function. More emphasis

might have been laid on the necessity for the teaching of psychology to medical students. However, the second point in the report to which attention should be drawn is what has been called the final clinical period. This is in effect a return to the old apprenticeship system. It is suggested that the final examination shall consist of two parts. Part I presumably would correspond to what is at present the final examination, and Part II would take place at least six months later and the final clinical period. If this were adopted, it would be the same as making it obligatory for a recent graduate to serve in a recognized hospital as resident medical officer. The idea must appeal to all medical educationists, for it has all the justification of common sense behind it.

The third point calling for comment is one that Australian universities should consider; in at least one school the position calls for immediate action. The words of the report are so definite that we can do no better than reproduce them:

> In the British system of administration of medical schools it is usually assumed that some one man, busy with his professional, research, or other university duty, can, almost at a moment's notice, and without any previous training or experience, assume an administrative position in a complex organization. It is further assumed that he can do so in addition to his work as a scientist, clinician, or educator. The position is untenable.
>
> The dean of a medical faculty or large medical school has, under modern conditions, a highly responsible and complex task. If he is to secure the proper order and working scheme and to afford counsel and supervision to students he can have little time for other occupation, and in at least the larger enterprises the duties may demand a whole-time service, with a corresponding measure of financial recognition.

The Federal Council of the British Medical Association in Australia should discuss the British Medical Association report with a view to bringing it officially to the notice of the governing bodies of Australian universities.

Current Comment.

AMŒBIC DYSENTERY.

GREAT interest was aroused last year by reports of an outbreak of amœbic dysentery in Chicago, and some months ago details of this appeared in the American literature.[1] Simultaneously the results of an investigation into the relation of the *Amœba histolytica* to those diarrhœal diseases grouped under the general clinical title of "colitis" were published in Canada by Annie Porter and R. H. M. Harditsy.[1] Comments have been made on these reports in other medical literature, but before the interest in the topic dies down it is well to draw attention to the little recognized fact that amœbic dysentery is always a diagnostic possibility in cases of diarrhœa in Australia. The dramatic methods of the American authorities included the issuing of a prodigious *questionnaire* addressed to 16,000 persons who had stayed in the hotel where the cases were first recognized, and thereby thirty-five cases of diarrhœal disease were discovered. Following upon this a nation-wide broadcast put the position before the public, advice being given to all sufferers from intestinal disorders to seek medical opinion. Intensive local investigation in Chicago revealed amœbic carriers among the hotel staff, and also contamination of the water supply. A special committee was then appointed to investigate the outbreak, particularly in view of the doubt existing whether in fact amœbic dysentery does occur in epidemic form in a civil population. As a matter of fact this investigation does not really establish beyond doubt the occurrence of an epidemic of acute diarrhœal disease due to this cause, or at least it does not prove that the amœbæ that were incriminated as the cause were actually ingested by the patients while in the hotel. This is pointed out by an American correspondent to *The British Medical Journal* (April 14, 1934), who remarks that investigations revealed a definite infestation of the people of Chicago by amœbæ and that it is possible that an acute dysentery was caused or stimulated by some bacterial infection or other irritant in persons already carriers. This is in keeping with tropical experience.

It is interesting to compare with this view the work done in Montreal. Annie Porter, who has had special parasitological experience, found no less than fourteen species of parasitic protozoa in the stools of persons living in Montreal, some of these complaining of intestinal disease, others being selected at random. She found amœbic infestation not uncommon, and points out that the sources of the protozoa are sewage, disseminated by improper means of disposal and aided by flies, and careless handling of food. Hardisty noted a number of cases of acute dysentery, and careful stool examinations revealed the amœba as the cause of subacute and chronic symptoms in other instances. He remarks that only for the fact that a highly skilled protozoologist was available for the requisite survey, these cases would not have been discovered. There was no relation discovered between the cases in Montreal and those in Chicago.

Outbreaks have occurred in Australia; whether true epidemics of acute amœbiasis are likely to occur or not is doubtful, but we cannot deny that where infestation exists the disease may come to light in one of two ways. Either sporadic cases may occur, as undoubtedly they do, or some other

[1] *The Journal of the American Medical Association*, February 3, 1934.

[1] *The Canadian Medical Association Journal*, February, 1934.

factor, possibly extrinsic, induces the occurrence of a number of cases of clinical dysentery in one area over a short space of time. In delimited areas and where massive infection is possible it might also happen that military experience would be repeated under conditions that are unusual in a civil population. It must be remembered, of course, that once investigations are begun in such outbursts of diarrhœal disease, a number of cases of amœbic infestation will be found, provided efficient technical assistance is available. The amœba appears to be universal: it constitutes not merely a problem of the tropics, it is quite common among people living in temperate climates. It is not known what proportion of those persons who harbour it in the bowel are likely to evince clinical symptoms, or on what other factors this will depend, but it is highly important that all members of the practising profession should remember that the disease occurs in Australia. In our midst are occasionally seen cases characterized by severe ulceration and liver abscess, and to recognize a suspicious case might save life and be of great importance to the public health.

GASTRIC SYMPTOMS DUE TO SYPHILIS.

A FULL knowledge of syphilis, as Osler points out, means a sound knowledge of medicine, and when a list is compiled of the various ways in which this many-headed hydra may attack, or at least involve the gastric functions, it is surprisingly comprehensive. At once the well known gastric crises come to mind, and also the occurrence of ulceration of the stomach due to the breaking down of gummata. But these are only two of a number of possible causes. The subject is thoroughly traversed in a recent review of the gastric disturbances secondary to syphilitic infections by Julius Friedenwald and Samuel Morrison.[1] At the outset they point out that gastric manifestations may occur through actual specific lesions of the stomach itself or through involvement of one or more of the other organs or systems, and also as a result of a generalized systemic infection. Taking this last type first, it should not be forgotten that an early luetic infection may cause gastric symptoms before any actual lesion exists, or at any rate, as the authors aptly quote, before the "lesion reaches the clinical horizon". Nausea, some abdominal discomfort, anorexia and even vomiting may occur during the primary systemic invasion. This may be, of course, evidence of very early affection of other systems, such as the nervous system, or again, due to a catarrhal gastritis, but even in our syphilized world cases do occur in which a sharp general illness heralds the first rapid dissemination of the spirochæte. However, it is not often that early syphilis will be responsible for digestive symptoms of such degree as to attract special attention. These are much more commonly due to the later stages of the disease. The œsophagus is but rarely affected, and then by tertiary disease. The stomach itself is not dealt with specially in this article, which is concerned with those disturbances of digestion that are caused by syphilis of organs other than the stomach; and hence the authors omit any detailed references to the well recognized forms of organic syphilis of that organ. It is sufficient here to recall the chief types: the ulcer type, the variety simulating scirrhous cancer, and the achlorhydric gastritis of luetic origin. Passing on, one case of interest is that quoted of a patient with a proved duodenal ulcer due to syphilis. The case history closely follows the usual sequence of the ordinary ulcer of this region, but it should be noted that a test meal revealed achylia. Intestinal syphilis is also described as a cause of gastric symptoms. In one case cited a young woman complained of a flatulent dyspepsia, blood-stained stools were noticed, and a hard mass was found in the rectum. The blood did not respond to the Wassermann test, but the spinal fluid gave a definite response and antispecific treatment resulted in a prompt cure. Presumably here there were other intestinal lesions to account for the reflex dyspepsia. Hepatic and splenic involvement in syphilis is probably too well known to require special description here. Friedenwald and Morrison remark that the exact type of chronic gastritis found in conjunction with syphilitic liver and spleen affection is not established; it may be mechanical, as in an ordinary portal cirrhosis, or it may be the result of multiple tiny gummata. The nervous system, when involved in the inflammatory activities of syphilis, gives rise to some of the most interesting manifestations of gastric disturbance. Of all the varieties of neurosyphilis the most important in this respect is *tabes dorsalis*, though derangements of the stomach are observed also in cases of cerebro-spinal syphilis and myelitis, and in known instances of cerebral arterial disease. In the last mentioned group the disturbance is of the nature of a neurosis; and it must be borne in mind that a pure gastric neurosis due to syphilis may also be met with, in which no definite involvement of other systems is demonstrated. To return to the subject of gastric crises, it may be useful to quote the classification that the authors borrow from Sainton and Trone, which includes five types; these are variously described as mild, abortive, severe, irregular and complicated. The mild type was first recognized by that great syphilologist Fournier. Pain is slight and vomiting is not prominent, but there are explosive eructations. The abortive variety bears close resemblance to a neurosis, but the severe type is more familiar, although uncommon. This is the kind of crisis that occasionally deceives surgeons and is responsible for those abdominal scars that cynical neurologists declare are, with Argyll-Robertson pupils and abrogation of certain of the lower deep reflexes, a pathognomonic sign of tabes. In connexion with tabetic crises the authors mention the association of gastric ulceration of a non-specific type. Perhaps, however, this is confusing; all that is necessary to remember is that a patient with signs of tabes may

[1] *American Journal of Syphilis and Neurology*, April, 1934.

have an organic lesion of the stomach, whether this be syphilitic or not. The irregular types of crises may alternate with other phenomena, such as hysterical attacks, or crises affecting other organs. The complicated types include that disturbing species of attack in which the vomitus contains blood. Charcot and others drew attention to such occurrences, and perhaps it is not here irrelevant to compare this variety with the severe forms of lightning pains, in which petechiæ may be seen in the skin at the site of the seizure. Lastly, reference is made by the writers to instances of pure gastric neurosis due to syphilis and relieved by the appropriate treatment.

The effect of reading a summary of this kind is to evoke a fear that surely many patients with gastric signs and symptoms of either apparently straightforward or aberrant varieties are examined and treated without a thought of the possibility of syphilis entering the head of the practitioner, and that in some of these cases the correct diagnosis is missed. Perhaps this may not occur frequently, but it does occur. Syphilis is the great imitator, as might be expected from its pathology, and just as the possibility of its existence is always thought of in nervous or cardiac disease, so it must not be forgotten in the study of the dyspepsias.

EMBOLECTOMY.

It is now a good many years since the pioneer work on the surgery of the vascular system proved that a correct technique made suture or resuture of large vessels possible. The heart itself has been successfully repaired after accidental wounding and has also been deliberately explored. It is possible that in very rare emergencies any surgeon might be called upon to repair a wound of the heart; but perhaps it is not realized that it might be justifiable for any competent operator to attempt the release of an arterial embolus. Embolism is an accident that is usually accepted as impossible to relieve except by the natural process of the establishing of an adequate collateral blood supply. Of course, most of the common varieties of embolism are those which occur in parts of the body inaccessible to practical surgical measures, such as, probably, the brain and to a lesser extent the pulmonary artery. In the latter case the heroic operation of Trendelenburg is available; but the surgeon able to undertake so responsible and difficult a procedure at short notice is but seldom at hand. But, apart from these instances, there are the embolic accidents to the larger arterial channels, and perhaps now and then a case will occur where prompt action may save a patient from gangrene. One difficulty that arises at the outset is that in most of such patients the embolism takes place because of the morbid state of the vascular system. Post-operative emboli are usually derived from thrombi in the veins and therefore are most common in the pulmonary arteries; arterial emboli that lodge in the general systemic circulation arise from the heart or great vessels, and this means that either the heart is the subject of definite organic disease or the arterial intima is more or less grossly affected by atheroma or other deforming or destructive change. These considerations narrow the field considerably; for a person who is the subject of serious vascular disease is certainly not one whose arteries are suitable for the delicate process of suture. However, it must be pointed out that these patients are just those whose collateral supply is likely to be inadequate, and an early and courageous attempt to bring the operation of embolectomy to a successful conclusion may be more in their interests than a policy of *laissez faire*. Many such attempts have been made and a good number of successes recorded. One that is of unusual interest is reported by Max Danzis and Clement H. Golden.[1] Their patient was unfavourable in type, for she was an elderly diabetic who had suffered a coronary occlusion. After a long convalescence she made a partial recovery, her heart being seriously damaged, with fibrillating auricles, and ventricles with greatly diminished reserve. No obvious sclerosis could be demonstrated in either the peripheral or retinal vessels. Sudden agonizing pain, which was unrelieved by morphine, heralded the occurrence of embolism of the right axillary artery, and complete blocking of the whole circulation of the arm followed. Under local anæsthesia the artery was exposed, controlled by tapes, and opened; three small thrombi, about one centimetre long, were expressed, and the vessel was closed by fine, oiled sutures of silk. An excellent recovery was made by the patient; brachial pulsation returned promptly, and though the radial pulse could not be felt for the first three weeks, good blood circulation was restored and the patient could use her arm freely and possessed normal sensation. At the end of a month, however, further embolism occurred in the same artery. Operation was again undertaken; but on this occasion, although two small clots were extruded from the incised vessel, the block was unrelieved. Eventually death took place from gangrene and cardiac failure. At the second operation the tissues surrounding the axillary artery were very fibrous and tough, and the lumen of the vessel was definitely constricted. This constriction was apparently post-operative and probably determined the arrest of the second shower of emboli. It is certainly curious that embolism recurred in the same artery at the same site; but in any case the poor state of the patient's heart rendered her very liable to a recurrence. While this case illustrates the effect of incision and suture of an artery in a patient with presumably unhealthy vessels, it also gives distinct encouragement to the prosecution of bold measures, even in persons who belong to the class known as bad risks. Even in such an apparently hopeless case a good, if temporary, functional result was obtained, and in the few appropriate cases it certainly seems rational to give the patient a chance rather than condemn him to gangrene, when the site of an embolism and other conditions preclude the possibility of a satisfactory collateral restoration of the circulation.

[1] *The Journal of the American Medical Association*, June 9, 1934.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Spermatogenic Erythema.

WILLIAM D. WHEELER (*The Urologic and Cutaneous Review*, April, 1934) describes a dermatosis that he believes to be due to the contact of seminal fluid with the skin. The lesion is an erythematous patch that occurs on the inner surface of the upper part of the left thigh in males; it is pinkish, irregular, superficial and not elevated; it causes no discomfort or pain. Thin starch-like scales, presumably consisting of dried seminal fluid, may be present. Inquiry may elicit the information that seminal fluid has been allowed to dry on the skin and underclothing. The erythema rapidly disappears when the patient pays greater attention to personal cleanliness and gives up erotic habits. In two years the author observed eleven cases. He remarks that he has been unable to find any record of the disorder in the literature, and he suggests the name spermatogenic erythema. He showed that it was not allergic in origin by applying a patch test with spermatic fluid to the skin of affected persons; no reaction occurred.

Acetarsone in the Treatment of Neurosyphilis.

L. H. GRIGGS AND J. F. SCHAMBERG (*Archives of Dermatology and Syphilology*, May, 1934) discuss the history of the use of acetarsone, known also as "Stovarsol", in the treatment of syphilis. Acetarsone is one of the pentavalent group of arsenicals. It has been used orally in congenital syphilis and for prophylactic purposes. As the pentavalent group of arsenicals is often favoured in the treatment of neurosyphilis, the reports of a further seventeen cases treated by intravenous injections of acetarsone are given. All the patients showed symptoms of syphilis from a clinical and laboratory point of view. Most of them improved subjectively and put on weight. The blood and cerebro-spinal fluid reactions were improved and it was shown to be of definite therapeutic value.

Kahn Reaction in Spinal Fluids.

A. B. LOVEMAN AND L. STOCKING (*Archives of Dermatology and Syphilology*, May, 1934) deal with the accuracy of serological tests of spinal fluids that are tinged with blood. In order to determine the effect on the Kahn reaction of the presence of syphilitic blood in spinal fluid which gave no reaction, the serum was taken from 100 patients with syphilis and added in various amounts to specimens of spinal fluid not reacting to the test. As small an amount as one twenty-eighth of a drop was found able to make six cubic centimetres of spinal fluid give a positive reaction. In order to ascertain whether any product of hæmolysis affected the serum of the spinal fluid, the blood of 22 syphilitics and 26 non-syphilitics was collected. The serum was removed with saline solution, the cells were placed in distilled water to undergo lysis, and the cellular *débris* was removed by centrifugation. The fluid was then added to specimens of spinal fluid known to give no reaction to the test. The specimens were tested in the usual manner and uniformly gave no reaction. Hence the substance responsible for the serological change in spinal fluid contaminated with blood, is present in the blood serum and not in the red blood cells. The importance of the cerebro-spinal fluid being absolutely free from blood in a lumbar puncture is emphasized.

Sensitization Tests: Their Value in Dermatology.

H. V. MENDELSOHN (*Archives of Dermatology and Syphilology*, June, 1934) makes a report on the result of an allergic study of certain cutaneous diseases over a period of four years. In all, 262 patients were investigated, but owing to the numerous visits required, only about 45% were followed right through. A thorough history of each case was taken and a standard set of about sixty questions was used. The following methods of testing were used: (i) dermal or scratch method; (ii) intradermal method; (iii) indirect or passive transfer test; (iv) patch test. The dermatoses studied were eczema, urticaria, *dermatitis venenata*, prurigo, *erythema multiforme*, angioneurotic œdema and neuro-dermatitis. The cases selected were those in which an allergic cause was suspected. Most of the tests performed were intradermal. In all, over 12,000 tests were performed. It was concluded that intradermal tests are of little value in demonstrating the cause of cutaneous diseases. A great number of positive intradermal reactions are obtained, but they are rarely of practical significance. Positive reactions to food substance or inhalants administered intradermally in patients with cutaneous diseases are far less specific than similar reactions to pollens in patients with hay fever. The indiscriminate subjection of patients with dermatoses to a large number of skin tests is not justifiable. Far greater help can be obtained by securing a proper history. Patch tests are of decided value, especially in cases due to external irritants.

Factors Involved in Leather Dermatitis.

H. BERMAN (*Archives of Dermatology and Syphilology*, May, 1934) discusses the various substances used in the preparation of leather and the manufacture of different leather goods, such as hat bands, which are responsible for cases of leather dermatitis. The results of patch tests made with the various substances used are given and the associations of fungus infections with dermatitis are mentioned. The specific allergic factors in the author's cases were tanned leather (probably due to synthetic tanstuff, and in one case the vat dye). The literature cites examples of specific irritation due to almost every substance used in leather manufacture. Fungus infections probably predispose to leather dermatitis through polyvalent broadening of the sensitivity to include other materials in addition to trichophytin and through injury to the skin caused by the inflammatory process facilitating the penetration of other irritating substances. Conversely, an allergic dermatitis may predispose towards a fungus infection. Focal infection may bring out a latent sensitivity or may help to maintain a leather dermatitis, but only temporary relief is obtained by removal of the offending focus.

Ulcerating Keloid in an Infant.

H. MACCORMAC (*The Proceedings of the Royal Society of Medicine*, April, 1934) reports the occurrence of an ulcerating keloid on the back of an infant, aged one and a half years. The diagnosis was confirmed microscopically.

UROLOGY.

Protatisme sans Prostate.

G. MARION (*Journal d'Urologie*, December, 1933, and January, 1934) discusses the group of diseases of the bladder neck (*maladie du col*) which cause symptoms of prostatism, but in which no enlargement or adenoma of the prostate gland itself exists. In one type, the congenital, the trouble commences in infancy, with difficulty in urination, leading later to partial or even complete retention. The disease may only develop slowly, so that medical attention is not sought before adolescence, or even later. In the second or acquired type the symptoms are similar, but there is no history of urination difficulties in infancy. There is usually a history of inflammatory or infective troubles, such as an old urethritis, periurethritis, prostatitis *et cetera*. Sometimes a stricture of the urethra is discovered and treated, but the difficulty in urination persists. In making an exact diagnosis one should exclude such causes as disease of the central nervous system. In making endoscopic examinations with the cystourethroscope, one may discover a definite median bar of glandular hyperplasic type (subtrigonal or suburethral submucous glands), but, on the other hand, the floor of the bladder neck may show no convex prominence. Normally the floor of the bladder neck presents a straight or level contour with the trigonal surface flowing smoothly down to the urethral surface. In the typical cases under review, on the other hand, the contour may be slightly concave, but nevertheless this portion of the internal meatus forms a ridge above the level of the trigone. In addition,

one should look for increase in the normal distance between the *colliculus seminalis* and the internal meatus as a sign of pathological change. In the study of pathological anatomy Marion insists that specimens obtained by total ablation of the bladder neck are necessary if one wishes for complete information, and since the operation he favours for this group of diseases is suprapubic ablation of the whole bladder neck with surrounding tissues, he has had a rich opportunity for such study, nearly eighty such operations having been performed. There has been no mortality so far, and the results have, almost without exception, been excellent. The pathological types are: (i) Muscular hyperplasia, without any inflammation, infiltration or glandular hyperplasia. (ii) A very commonly met group in which inflammatory infiltration occurs in the sphincter muscle; this may progress to more or less complete replacement of the plain muscle by fibrous tissue. The mucosa is usually the seat of inflammatory or fibrous infiltration at the same time. (iii) In addition to the inflammatory or fibrous infiltrations described above, glandular hyperplasia exists. (iv) Certain authors, working on much smaller pieces removed by endoscopic punch or resection operations, describe a type with hyperplasia of the connective tissue leading to the formation of bars or valves.

Diverticula of the Urinary Bladder.

ROBERT H. HERBST (*The Journal of the American Medical Association*, January 20, 1934) states that ideas about the origin of vesical diverticula must be revised. The majority of diverticula are not congenital, as formerly thought, but develop in weak areas of the bladder wall as a result of bladder neck obstruction. Two main types are recognized: (i) Non-retention diverticula, which are seen in a cystogram to empty in micturition coincidentally with the bladder. Such diverticula have a wide route and are relatively uncommon, occurring usually in association with rather rapid distension of the bladder behind an obstruction prostatic adenoma, so that insufficient time has been available for compensatory hypertrophy of the bladder wall to occur. (ii) Retention diverticula, which have a small muscular opening into the bladder, which do not empty coincidentally with the bladder during micturition and which are usually associated with fibrosis or bar formation at the bladder neck. Here the obstruction has been slow and compensatory muscular thickening of the bladder wall has occurred. Infection may further stimulate contractions of the hypertrophied bladder muscle. In the non-retention type the bladder neck obstruction should be removed, but the diverticula may be left untouched. In the retention type the diverticula must be removed radically if the patient is to be relieved of his symptoms and his infection. Usually in these cases the bladder neck obstruction is removed at the same time. If the diverticula are in an early stage of development, the bar or fibrosis may be dealt with by endoscopic resection so as to arrest further development of the diverticula and possibly avert the necessity for diverticulectomy.

"Thorotrast" in Pyelography.

H. BOEMINGHAUS (*Zeitschrift für Urologie*, January, 1934) states that he is in disagreement with the claims put forward by the firm sponsoring "Thorotrast", a colloidal oxide of thorium, as a radiographic contrast medium for the urinary tract. In the kidney and ureter this substance is apt to be precipitated into large masses of substance which are retained undamaged for a very long time. Thus a wrong diagnosis of calculus is apt to arise if a future examination is made elsewhere. Complications, such as acute colic, have already been reported on account of blocking of the narrower portions of the upper urinary tract by this precipitated substance. Such precipitation is particularly apt to occur in cases in which a calycal, pelvic or ureteric channel is partly blocked by some form of organic obstruction. The radiographic properties of this thorium compound are, however, so excellent that it is hoped that someone will succeed in increasing the solubility of the substance as well as stabilizing its colloidal properties.

Renal Tumour and Gastric Symptoms.

THE association of gastro-intestinal symptoms and pathological conditions of the renal tract is fairly common, but C. S. Swan (*The New England Journal of Medicine*, February 15, 1934) has succeeded in demonstrating the implication of sympathetic nerves in metastatic tumour tissue. The patient had epigastric pain, indigestion for ten months, culminating in very severe attacks of short duration. Clinically, gastric carcinoma was diagnosed, but a bismuth enema demonstrated a filling defect of the descending colon due to an extracolonic tumour. Pyelography proved the presence of a left renal tumour, which was incompletely removed by operation. The patient died two weeks later, and at autopsy the sympathetic nerves in the region of the cœliac ganglion were found to be enmeshed by metastatic tumour tissue.

Chronic Pyuria in Children.

MEREDITH CAMPBELL (*Journal of Urology*, February, 1934) has reviewed over 400 cases of chronic pyuria in children, the condition being considered chronic if it persists more than four to six weeks. Pyuria may be present from birth or may occur at any age. Lesions which cause urinary stasis are the principal predisposing cause. The usual pathological changes in the kidney are those of chronic interstitial suppurative pyelonephritis. In addition, changes due to back pressure, stasis, stone *et cetera* may be found. The author appeals to physicians, especially pædiatricians, to appreciate the fact that failure to eliminate urinary infection in children in a few weeks almost invariably indicates the presence of obstruction. The age incidence, bacteriology, leading symptoms, and results of examination are shown in tabular form. Medical treatment is invariably practised as a preliminary. Routine investigation is then undertaken and treatment based on the ætiology. This includes nearly every form of treatment used in adult surgery; but the author finds the results more encouraging. Special mention is made of the importance of avoiding post-operative acidosis and of performing blood transfusions early. Cure is to be anticipated in the majority if the indications of thorough investigation are carried out.

Thrombosis of Renal Vein.

A. B. HEPLER (*Journal of Urology*, April, 1934) reviews the literature and reports two further cases of thrombosis of the renal vein. These are classified as primary (or autochthonous) and secondary; suppurative and non-suppurative. The thrombus involved the entire venous tree of the kidney in 22 of 40 cases. In 20 cases there were extrarenal thrombi. The most commonly associated condition is ileo-colitis. The author believes that a correct clinical diagnosis is possible and that "this lesion presents a definite clear-cut syndrome" consisting of sudden hæmaturia, lumbar pain and tenderness and rapid progressive enlargement of the kidney. The diagnosis is confirmed by cystoscopic findings of unilateral bleeding and reduced or absent kidney function; radiographically by an enlarged kidney outline without any shadow in excretory urography. The disease is most frequent in infants with ileocolitis, which often overshadows the renal condition and precludes surgical treatment. The author advocates early nephrectomy.

Restoration of Renal Function.

W. WALTERS AND V. S. COUNSELLOR (*Journal of Urology*, May, 1934) direct attention to the recuperative powers of renal tissue after removal of obstruction. It is pointed out that the renal function tests in current use, although they may indicate with moderate accuracy the renal function at the moment, give no indication of what it will become when the obstruction is removed, nor is the amount of reserve estimated. This defect is attributed to: (i) resting state of some glomeruli (Richards), (ii) pyelovenous backflow, and (iii) the uncertain reflex action of a stone in the kidney or ureter. The suggestion is that in determining between nephrectomy and a conservative operation one should be guided by the amount of healthy renal tissue and the probability of eradicating or reducing infection rather than by the pre-operative renal function tests. For post-operative treatment of infection the ketogenic diet is advocated.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal Prince Alfred Hospital, Camperdown, on May 30, 1934. The meeting took the form of a series of demonstrations by members of the honorary staff.

Angina Pectoris.

DR. M. C. LIDWILL'S first patient had been shown by him two years previously. She was a woman of fifty years of age, who was operated upon by Dr. F. P. Sandes for the relief of *angina pectoris*. The operation performed was that of Leriche—the division of the five external rami of the inferior cervical ganglion on the right side. This patient had been entirely free from pain on exertion or excitement for eighteen months, but there was limitation of effort on account of dyspnœa. Six months ago she was in a motor accident and broke two or three ribs, and since this some angina had reappeared, which could be kept largely under control by means of theocin and trinitrin. The question of operating upon the left inferior cervical ganglian was discussed.

Myasthenia Gravis.

Dr. Lidwill's next patient was a woman, aged forty-seven years, who was suffering from *myasthenia gravis*. On December 11, 1933, she was attacked with severe frontal and occipital headaches. Two days afterwards she noticed that her right upper eyelid drooped and she had double vision. A week later the left lid became affected in the same way. Her jaws became tired during meals. There was weakness of the voice, then of her arms and legs, and particularly of her fingers. Rest at first relieved her condition, but latterly rest had given but little relief. Three weeks prior to the meeting she was admitted to hospital, having great difficulty in lifting her legs while in the horizontal position. She was put on ephedrine sulphate, 0·024 gramme (three-eighths of a grain) three times daily. Within twenty-four hours there was marked improvement. Four days after that, glycine, 30 grammes a day, was ordered, and she had been taking the two drugs for the last sixteen or eighteen days. She could now move her legs quite easily, walk about in moderation, and her condition was most markedly improved. The ephedrine seemed to be more valuable than the glycine.

Pernicious Anæmia.

Dr. Lidwill's last patient was a young man of twenty-one years of age, who was apparently suffering from pernicious anæmia, but who had hyperchlorhydria. He had been ill since 1932 and had been in another hospital, from which he was discharged with a red cell count of 2,300,000 per cubic millimetre. He was admitted to the Royal Prince Alfred Hospital six weeks before the meeting with a red cell count of 1,840,000 per cubic millimetre and a colour index of 1·2. At the end of a month his red cell count was only 2,700,000, and during this period he had been given four cubic centimetre injections of "Prohepar" every second day, combined with liver and extra food. He was then given a blood transfusion, when his red cell count rose to 3,200,000 per cubic millimetre; but since this his blood count had been steadily falling and was now only 3,000,000. His "Prohepar" was increased to ten cubic centimetres every second day, and then to ten cubic centimetres every day. He has also had *pil. ferri*, 30 a day. Points were noted in this case of the lack of response of this patient to all treatment, and yet on the most careful examination his blood picture was absolutely typical of pernicious anæmia. There was no achylia or achlorhydria present.

Addison's Disease.

DR. ALLAN S. WALKER showed a patient illustrating the result of treatment in Addison's disease. This patient, a woman, aged forty-four years, was demonstrated two years ago as furnishing a classical example of this disease, and at that time she was helpless, suffering from constant nausea and vomiting, and unable to make the simplest muscular movement without fatigue and prostration. At this time no adrenal cortical hormone was available, but shortly afterwards, while the patient was an inmate of the Royal Hospital for Women, some "Eschatin" came on the local market and treatment was begun. Dr. David Ross, who had originally made the diagnosis, had continued regular treatment during the last two years with a most gratifying result. Dr. Walker pointed out that now this patient looked vigorous, walked about freely and indeed was doing her household work, including washing, whereas when previously shown at a Branch meeting, she was wheeled into the theatre ill and helpless. A striking feature of this case was the small amount of the cortical hormone administered. At no time were massive doses given; when first she returned from hospital, one cubic centimetre was injected intramuscularly each day for three weeks, and thereafter at decreasing intervals. At the time of the meeting she was receiving one cubic centimetre about every ten or fourteen days. The interval had sometimes been longer, on account of the expense of the extract, but when the patient found she was not so well she at once reported for treatment. In all, only 140 cubic centimetres of "Eschatin" had been given in two years. It was remarkable that so excellent a result had been attained with so small an amount of hormone.

Dr. Walker further pointed out that salt had been administered as well during recent months. He had inquired some time ago from Dr. Ross about the patient's progress and had mentioned the advisability of giving sodium chloride in view of the fact that a greatly increased excretion of this salt had been observed in Addison's disease, and that administration of the salt had a definite effect in the direction of causing clinical improvement and of sparing the amount of cortical hormone necessary. He was then interested to find that the patient had been thus advised a little time previously and had remarked herself that she had spontaneously been taking large amounts of salt, a fact corroborated by her family. The clinical improvement in this woman had been a truly remarkable one. Her blood pressure was now 110 and 80 millimetres of mercury for the systolic and diastolic readings respectively, whereas while in hospital it had been in the neighbourhood of 60 millimetres systolic pressure. The pigmentation was still most marked and typical of the disease, but she was confident herself that it was substantially less, especially on the body. The economic importance of the giving of salt was pointed out; this patient took nearly two teaspoonfuls of salt daily, in addition to what was cooked in the food, and the negligible cost of this form of treatment somewhat offset the high cost of the cortex extract. The result in this case showed that success might sometimes be attained without prohibitive expense in this rare but most serious disease.

Megacolon and Lymphatic Tuberculosis.

Dr. Walker's second case was that of a small boy, aged two years, with a chronically enlarged abdomen. This child, a State ward, was first seen in the anti-tuberculosis dispensary as a contact, having been exposed to known infection. The history was indefinite, but it was stated that the stools had been noticed to be unduly large; otherwise the child was well. The abdomen was greatly and evenly distended and some irregular masses were felt. These were apparently fæcal, as they disappeared after the child was admitted to hospital. The chest did not present any abnormal signs and the colour and nutrition were satisfactory, dentition being normal for the age and there being no beading of the ribs or other rhachitic indications. A blood count gave the following figures: erythrocytes, 4,080,000 per cubic millimetre; hæmoglobin value, 74%; colour index, 0·92; leucocytes, 7,900 per cubic millimetre; neutrophile cells, 33%; lymphocytes, 55%; monocytes, 1%; eosinophile cells, 9%; basophile cells, 2%. The result of the Mantoux tuberculin test was strongly positive. A radiogram of the chest showed some displacement of the trachea to the left in the lower cervical region, probably by enlarged paratracheal lymph nodes. Opaque enema revealed a generalized dilatation of the whole colon,

described by the radiographer as probably a mild Hirschsprung's disease. Examination of the fæces showed that they consisted mainly of undigested vegetables. The total fat was estimated as 10% and the fatty acid as 84% of total fat.

The interest in this patient lay in the exact diagnosis. On his admission to hospital it seemed likely that the abdominal enlargement was due to a plastic tuberculous peritonitis, and indeed there was definite evidence of tuberculous lymphatic infection. The other possibilities were cœliac disease and megacolon. Examination of the stools excluded the former, and the absence of any obstructive symptoms or of any sign of ascites, together with the dilatation of the colon seen in the skiagram, pointed to the latter; although the possibility of some tuberculous abdominal disease could not be entirely excluded. The degree of abdominal distension had considerably lessened while the child had been in hospital, and no further measures other than adequate feeding and general attention were contemplated at present.

Hydatid Disease of Both Lungs.

DR. COTTER HARVEY showed a girl, aged six years, who in September, 1933, spent two weeks in hospital with bronchopneumonia. She had had cough ever since and had not picked up.

Early in February, 1934, she started one night to cough up fluid. A large amount of fluid was brought up. She complained also of pain in the left side about this time. Following this the cough lessened; some further fluid was brought up, but no sputum.

On examination on February 14, 1934, the lower part of the right side of the thorax was seen to be bulging. Dulness was present and breath sounds were absent over this area. An impaired note was present on the left upper half anteriorly and at the apex posteriorly. The breath sounds were well heard; there were no accompaniments.

The radiologist had reported as follows:

> There is a circular opacity in the left axillary region. In the apex and infraclavicular region there is irregular mottling with thickening of the overlying pleura. The appearance here is consistent with some unresolved pneumonia and a hydatid cyst in the upper lobe. There is a very large lobulated shadow at the base of the right lung rather more anteriorly than posteriorly. The appearance suggests a very large hydatid cyst.

The Casoni test had yielded no reaction. A blood count revealed 1% of eosinophile cells. The patient was afebrile.

On March 8, 1934, Dr. Edye operated; he drained a large subpleural hydatid cyst at the base of the right lung, removed the ectocyst, and closed the wound without a drainage tube. A valvular pneumothorax with subcutaneous emphysema followed, and a drainage tube was inserted. Further convalescence was uneventful.

The patient had kept well since, with little cough and sputum, but serial skiagrams demonstrated that the hydatid in the left lung was likely to lead to further trouble and probably an abscess.

Dr. Cotter Harvey pointed out that the following questions had to be considered: (i) Is further surgical intervention advisable on the left side? (ii) If so, should it be done now? (iii) Will the right lung heal completely?

He said that later skiagrams showed a progressive diminution in the size of the cavity on the right base, but the lesion in the left lung had remained stationary.

In answer to the questions propounded, DR. P. TILLETT suggested that artificial pneumothorax might adequately cause collapse of the area in the left lung and lead to its healing.

PROFESSOR H. R. DEW stated that this could not lead to the expulsion of the crumpled cyst, and that operation was necessary, and that it should be performed without delay, preferably in two stages.

Hydatid of the Lung.

Dr. Cotter Harvey also showed a married woman, aged thirty-two years, who was seen on May 22, 1934. She said that three years ago an abscess suddenly broke in her lung and she coughed up a lot of blood and stuff. The corruption cleared in one day, then congealed blood came for one week, then nothing.

Twelve months later she started to cough yellow phlegm daily; of this she took no notice. Six months ago she first coughed up a "water blister" and first consulted Dr. Owen, of Tullamore. Dr. Owen found: (i) typical hydatid ectocyst, (ii) a "+++" response to the Casoni test, (iii) eosinophile cells 7%. Since then she had coughed up three further "blisters", but had generally kept well.

On examination some impairment of note was found in the right interscapular region and weak breath sounds towards the right base. The eosinophile cells were 6%. The Casoni test gave a "+++" reaction.

Dr. Cotter Harvey showed skiagrams of the patient's chest and discussed the advisability of operation. The X ray films showed a hydatid cyst about the size of a pullet's egg at the base of the right upper lobe; it was deeply placed. It was generally agreed that no treatment was indicated at the moment, but that the case should be kept under observation.

Familial Pulmonary Tuberculosis.

Dr. Cotter Harvey pointed out that Mr. and Mrs. K. were "contacts", nominally, of their daughter, aged eighteen years, at present in Waterfall Sanatorium with bilateral pulmonary tuberculosis, and constantly febrile. The father was working in the Railway Department. He had had a slight morning cough for two months and admitted to some lassitude, but had not lost weight. He had definite signs in the right upper lobe of a chronic lesion. His sputum contained no tubercle bacilli.

The mother was well, except for occasional colds and pain between the shoulder blades. She had no abnormal chest signs. No tubercle bacilli were found in her sputum.

Dr. Cotter Harvey pointed out that the X ray appearance of the father's and mother's chests was almost identical, a curious coincidence. Secondly, there was a suggestion that the father had an old and healing lesion, but had infected his wife and daughter at some time previously. Quite by chance, however, it had been found that another patient attending the dispensary, giving another address, had lived continuously for five years with the K. family in considerable intimacy, as "one of the family". Though this patient offered a history of cough only for two months, the K.s insist that he had had a constant cough and sputum all the while he was living with them, but that no one took any notice thereof. This last mentioned patient had advanced bilateral pulmonary tuberculosis. Dr. Cotter Harvey asked: "Did he infect the three members of the K. family?" If, as seems obvious, he did, here was a striking exception to the rule that pulmonary tuberculosis was a childhood infection. It should be noted that the daughter, at a more susceptible age, had a much more serious type of disease than her parents. The latter might not have noted symptoms or sought medical advice for a long time.

Scleroderma.

DR. E. SUSMAN showed a girl, aged eighteen years, a typist, who was suffering from scleroderma. The patient came to hospital seeking advice for an eruption on the bridge of the nose, which had been present for one month. She was treated by gold injections and carbon dioxide snow for *lupus erythematosus*. Her main symptoms were frequent headaches, loss of energy, shortness of breath, and sometimes a hesitancy in her speech.

On examination the patient had a curious set facies. The skin appeared thickened and difficult to lift off the deep structures. It dimpled slightly, giving an appearance that was suggestive of solid œdema. The teeth were grossly carious. The chest was normal. The basal metabolic rate was −9%. The sugar tolerance was enormously increased. The Wassermann test gave no reaction. The blood count was normal. The blood calcium was 11·5 milligrammes *per centum*. The blood cholesterol was 83 milligrammes *per centum* and the creatinine 21 milligrammes *per centum*.

Subacute Combined Degeneration of the Spinal Cord.

Dr. Susman also showed a man, aged sixty years, a salesman, who was suffering from subacute combined degeneration of the spinal cord.

The patient gave a history of weakness of the legs, difficulty in walking and numbness of the hands for the last two years. These symptoms had been steadily progressing.

On examination the patient had ataxia, increase of tendon jerks and absence of joint and vibration sense. The cranial nerves were clear. Achlorhydria was present. Both blood and cerebrospinal fluid failed to react to the Wassermann test. The red cells numbered 2,780,000 per cubic millimetre. The hæmoglobin value was 64% and the colour index was 1·1.

Dr. Susman pointed out that this case served to illustrate the early domination of the nervous symptoms, to the almost total exclusion of symptoms of anæmia, that might characterize the clinical picture for many months. The appearance of the patient did not suggest such an advanced anæmia.

Syphilitic Hepatitis.

Dr. Susman's third patient was a labourer, aged thirty-eight years, who was suffering from syphilitic hepatitis.

For two years the patient had been suffering from constant dragging pain in the region of the right side of the upper part of the abdomen, flatulence, constipation, and breathlessness on exertion. The pain had increased in severity and was not affected by the taking of meals or drugs. He had never been jaundiced.

On examination hepatic enlargement was present—the liver margin could be palpated one hand's breadth below the costal margin. The Casoni test gave a positive reaction. The radiologist reported that Graham's test probably gave a positive result.

On October 10, 1933, exploratory operation was performed by Dr. Farranridge. The liver was found to be enormously enlarged, the lower edge of the viscus being thickened and reaching down to the umbilicus. A small piece was excised for biopsy. The spleen was "gritty" on palpation. Recovery was uneventful.

A histological report by Dr. Davies suggested that the lesion might be syphilitic. The section showed: (i) a considerable thickening of the capsule, (ii) irregularly arranged patches of lymphocytic infiltration, (iii) scattered areas of portal cirrhosis and thick-walled arterioles. The Wassermann test gave a "+++" reaction. For the last six months, under antisyphilitic treatment by bismuth and small doses of "Novarsenobenzol", the patient had lost all his symptoms and had put on a stone in weight.

Diabetes Mellitus and Alopecia.

DR. A. W. MORROW showed a married woman, aged thirty-two years, who was suffering from *diabetes mellitus* and complete alopecia.

The patient was seen in the out-patient department on the day before the meeting, when she complained of increasing fatigue and loss of weight, together with excessive thirst and polyuria during the last six months. Also, in 1918, she had developed an area of alopecia on the occipital area of the scalp. This remained stationary until immediately after her first confinement in 1925, when, within a period of three days, she lost all the hair of her body.

On examination the urine contained sugar and acetone, both described as "+++". The only evidence of hair on the body were several fine eyelashes on the left lower lid; these had grown during the last few months. As yet no search had been made for possible causes of the alopecia.

Myxœdema and a Lung Condition.

Dr. Morrow also showed a woman, aged forty-three years, who was married and had four children. She was suffering from myxœdema and a chest condition that was thought to be either tuberculosis or bronchiectasis.

The patient had a history of pain; the history was obtained to a large extent from her daughter, aged seventeen years. She complained of loss of energy and weakness, with vague generalized pains in the extremities for three years. During the last two years there had been marked failure of memory and mental capacity. During the last year she had noticed her hair falling out and her skin becoming much coarser and drier. During 1933 the patient suffered from menorrhagia, due to *fibrosis uteri*, and a hysterectomy was performed. Also, during 1933, she was said to have developed a cough with scanty sputum.

On examination in the out-patient department the patient demonstrated the characteristic features of myxœdema: marked mental hebetude, the characteristic pallor of face with a malar flush, baggy eyelids, dry, brittle hair, scanty eyebrows, dry, harsh skin, characteristic voice. She was not fat and there was but little alteration in the shape of her limbs. The blood count revealed a mild anæmia. The basal metabolic rate was −38%.

During the next fortnight the patient had several hæmoptyses and once again attended the out-patient department, having previously forgotten to attend as instructed (a good example of her mental condition). X ray examination showed an area of dulness at the left base, with probable cavity formation, possibly tuberculous, possibly due to bronchiectasis. Sputum examination failed to reveal tubercle bacilli. Shortly after admission to hospital the patient developed pleurisy with a rise in temperature, which had prevented further investigation for the present.

Diagnosis of Mitral Stenosis.

DR. J. KEMPSON MADDOX remarked on the futility of attempting to demonstrate cardiological cases to such a large gathering, but proceeded to give an account of some of the accessory methods available in the diagnosis of mitral stenosis. He pointed out that the early recognition of the lesion was of the utmost importance in prognosis and to an almost equal degree in the management of the patient. Too often one found that a patient had been discharged from hospital after acute rheumatism and the parent congratulated upon the child's escape from valvular sequelæ; and a year or so later the same child presented himself with a rapidly maturing mitral stenosis. Cardiology today was striving more towards the early recognition of heart disease, since attention to prophylaxis and early treatment were the two aspects of the subject which gave the greatest promise of relief. Assistance in the early recognition of disease of the mitral valve might be obtained by the following methods:

1. Amplification of the presystolic murmur. For this some form of stethoscope, such as the French phenendoscope, might be used. Much better, however, was the modern electric polystethoscope, whereby the heart sounds were amplified by a system of wireless valves, while breath sounds and other extraneous noise were excluded by selective sound filters. Such an instrument was at present in use at the Royal Prince Alfred Hospital for teaching purposes and had been demonstrated at a previous clinical meeting.

2. Photographic recording of heart sounds. With a few additional attachments it was possible to record photographically as a tracing, in a manner similar to the electrocardiograph, the characters of heart sounds translated into electrical impulses on the principle of the everyday telephone. The presystolic murmur gave a sufficiently clear tracing.

3. Increase in volume of the auricular output. The effect of exercise in intensifying a soft presystolic murmur was well known. The injection of adrenaline had a similar effect, especially in children, while the murmur was best listened for with the patient recumbent in the left lateral posture. A suitable arrangement of pillows rendered the apical region readily accessible to the binaural stethoscope.

4. Radiological appearances. The appearance of the cardiac outline on the X ray screen was probably the most important aid of all. A straightening of the left cardiac border or even a slight convexity of the *conus arteriosus* was visible quite early, while in the right anterior oblique position the encroachment of the enlarged left auricle and right ventricle upon the retro-cardiac translucent space was readily visible. A backward dis-

location of the œsophagus and its indentation by these chambers were plainly apparent during the swallowing of opaque material.

5. Cardiographic appearances. These unfortunately usually lagged behind a clinical appreciation of the lesion. The characteristics of a typical mitral cardiogram usually comprised a broadening and increased voltage of the *P* wave, with the *S* wave being greatest in the first lead and the *R* wave in the third. In Dr. Maddox's experience a flat-topped *P* wave was distinctly a more common finding than a notched or bifid conformation. Dr. Maddox illustrated his remarks by an appropriate series of lantern slides.

Bilateral Hydronephrosis.

DR. J. W. S. LAIDLEY showed the skiagrams of a woman, aged sixty years. The previous history was irrelevant. For some months she had complained of dull constant right lumbar pain. Plain skiagrams of the urinary tract showed the right kidney outline to be distorted and to contain some indefinite flecks of radio-opaque substance. The left kidney outline was not seen. The appearance of the right kidney strongly suggested a pyonephrosis of long standing, probably tuberculous. A cystoscopic examination was carried out, when it was found impossible to catheterize the right ureter further than the ureteropelvic junction. No sodium iodide could be injected into the right kidney pelvis for pyelographic purposes. Urinary examinations were carried out for tuberculosis, but were all without result. It was decided to perform a right nephrectomy if the function of the left kidney was adequate.

A left pyelogram was performed and the left kidney was found to be the seat of an extensive hydronephrosis, the sac containing over a pint of fluid. In view of this finding it was decided not to proceed further with surgical measures. These findings were of such interest that it was decided to carry out functional tests. The results were as follows: The blood urea was 42 milligrammes per 100 cubic centimetres. One cubic centimetre of phenolsulphonephthalein was injected intravenously after a catheter had been inserted into the left ureter. No dye was excreted in fifteen minutes.

"Uroselectan B" was injected. No radio-opaque substance was visible on the right side in films taken over a period of two hours, but a faint shadow was observed on the left side after two hours.

Dr. Laidley said that it was interesting that an individual who looked and who felt comparatively well should have been able to carry on for so long with such a renal condition. It seemed that the right kidney was completely out of action and life was being sustained by an extremely poor left kidney. At no time had there been any symptoms referable to the left side.

Renal and Vesical Calculi.

DR. M. S. S. EARLAM showed the skiagrams of a patient with renal and vesical calculi. The patient was a female, aged forty-five, and had a history of a severe cystitis, with hæmaturia, for three months. A skiagram of the urinary tract showed:

1. A huge right renal calculus which had caused no symptoms. This stone had its long axis in a roughly horizontal position, which had at first suggested the presence of horseshoe kidney, but a normal left pyelogram had eliminated this possibility. The right ureter, visualized by retrograde ureterography and pyelography, was seen to take a very tortuous course, ascending to the level of the first lumbar vertebra, then descending to the uretero-pelvic junction opposite the second. Very little opaque medium had passed this point, suggesting that the stone was embedded in a thin shell of fibrotic kidney tissue.

2. Two stones in the bladder.

The rarity of this condition in the female, especially, as in the present instance, in the absence of urethral obstruction, was stressed. The patient had severe bronchiectasis, contraindicating the administration of a general anæsthetic, and it was intended to crush the stones under spinal or caudal anæsthesia. The stone in the right kidney, causing, as it did, no symptoms, did not call for operation, which was also rendered inadvisable by the pulmonary condition.

Diverticula of the Urethra.

Dr. Earlam also showed the skiagrams of two female patients with diverticula of the urethra. This was an extremely rare condition, less than thirty instances having been reported in medical literature. In one of the present cases the diverticulum contained a calculus, which was easily palpable on vaginal examination, while in the other X ray examination after injection into the diverticulum of sodium iodide solution through a ureteral catheter demonstrated its outline very clearly. In neither instance had the diverticulum given rise to any very distressing symptoms.

Perinephric Abscess.

Three pyelograms of patients suffering from perinephric abscess were shown. It was pointed out that positive pyelographic findings in that variety of perinephric abscess due to metastatic infection were the exception. The three pyelograms shown were such exceptions. In the first the renal pelvis was distorted and pushed upwards and medially by the inflammatory mass, while in the second the kidney was normal in position, but showed early intrarenal and extrarenal hydronephrosis, presumably due to pressure on the upper part of the ureter by adjacent inflammatory change. The third pyelogram showed a very unusual finding, as the injected sodium iodide had found its way, in the region of the lowest minor calyx, through to the perinephric tissues. All three patients had done well following drainage of the abscess.

Malignant Disease of the Cervix Uteri.

DR. HERBERT H. SCHLINK, DR. CLEMENT L. CHAPMAN AND DR. GEOFFREY F. DAVIES discussed malignant disease of the *cervix uteri*.

They said that the fact had gradually been forced on medical men that cancer of the cervix must be diagnosed in its first stages if better results were to be obtained. However, the problems of early diagnosis were surrounded with difficulties, as in the earliest stages no symptoms existed and ordinary palpation and inspection were not conclusive. There were two means only of discovering the very early cases: (i) the colposcope, which aided our inspection; and (ii) biopsy, which confirmed suspicions. Lantern slides were shown to explain why the colposcope was of use, and Dr. Davies showed some of the earliest positive biopsies met with in the gynæcological clinic.

Most medical men who used a vaginal speculum in their routine examinations were familiar with the naked eye appearance of the normal junction of squamous and cylindrical mucosa at the *os uteri*, also when it was mechanically damaged by tears giving rise to ectropion. They could also recognize when inflammation was superimposed and easily diagnose frank cancerous ulcers, but when the view of the cervix was magnified, more minute details were easily seen and the definite transition between the two types of epithelial cells was found to be broader than the mere line seen by the naked eye. It was in this transitional zone that abnormalities occurred which could be seen by the colposcopic magnification, namely, leucoplakic patches, desquamation of the superficial layer of cells and precancerous thickenings which would ordinarily be missed by the naked eye. Any suspicious patches discovered could be excised and submitted to microscopic examination. By working along these lines many cancers of the cervix would be forestalled. Some surgeons disagreed with the taking of biopsies, as they believed that excision tended to spread the cancer cells. Dr. Schlink, Dr. Chapman and Dr. Davies certainly could not agree with this opinion, especially in the earliest cases which they had been discussing, because it was nearly always possible to cut wide of the suspected area. Even in advanced cases they believed there was no danger of aiding the spread, as there was usually an adventitious zone of protective inflammation around the growth in which the veins and lymphatics were more or less blocked. As regards the arteries, the blood flowing from their cut

orifices prevented any cancer cells from gaining entrance. The cautery knife might be better than the cold steel. In the cases of frank cancer the uterus was immediately or after a short time excised, so that there was little likelihood of spread. Lastly, it would be impossible to diagnose the earliest cancers if biopsies were given up.

Coloured lantern slides were shown demonstrating congestion and beginning simple erosion, laceration with ectropion, old ectropion with congestion of cervix, chronic cervicitis with *ovula nabothi*, gonorrhœal erosion with *ovula nabothi*, mucous polypus with simple erosion and early epitheliomatous ulcer. Microphotographs of the normal junction of the squamous and cylindrical mucosa at the *os uteri*, papillary erosion and follicular erosion, and the exact nature of the transitional zone were explained. Sections were then demonstrated on the microprojector, showing: (i) premalignant change, (ii) squamous metaplasia, and (iii) early malignant disease.

Finally, two cases of concurrent ovarian cancer and cancer of the *corpus uteri*, with similar histological structure, were demonstrated and the mounted specimens were shown. The question was discussed as to which was the primary growth. The nature of the malignant cells indicated that they may have broken through the ovary and been carried via the Fallopian tube to become implanted in the cavity of the uterus.

(To be continued.)

NOMINATIONS AND ELECTIONS.

THE undermentioned has been elected a member of the Victorian Branch of the British Medical Association:

Spring, John Patrick, M.B., B.S., 1903 (Univ. Melbourne), 116, Nicholson Street, Fitzroy.

Correspondence.

THE TOADSTOOLS AND MUSHROOMS AND OTHER LARGER FUNGI OF SOUTH AUSTRALIA.

SIR: May I call the attention of the profession to the "Handbooks on the Fauna and Flora of South Australia" which are being prepared by the South Australian Branch of the British Science Guild and are being published from time to time by the Government of South Australia.

The manuscripts of these works are presented by the authors to the people of South Australia, and the Government on its part is undertaking the cost of publication. Mr. J. M. Black's "Flora of South Australia" belongs to the series and is one of the most outstanding botanical works in Australia during the last fifty years. Professor Wood Jones's work on the mammals is a most valuable contribution. Other numbers of the series include handbooks on the fishes and on the crustaceans, and Professor Howchin's account of the "Building of Australia".

These works have appeared in parts, the price of each part varying between 3s. and 7s. 6d. The last issue to appear is one by Dr. J. B. Cleland dealing with the mushrooms and similar toadstools of South Australia, constituting Part I, which will be followed later by Part II, dealing with the more woody species of larger fungi. This work contains an introductory portion of some interest to the ordinary person as well as to the medical man. This portion is succeeded by a systematic description of species which, of course, appeals almost entirely to the specialist. There are six plates in colour as well as ordinary illustrations, and the published price is 5s., from the Government Printer, Adelaide. It can also be obtained from local booksellers.

I would like to point out that the Government, in publishing these hand books, can never recoup itself for the monetary outlay, but is publishing them as contributions to Australian science. It is hoped that these works will meet with a reasonable sale so that the Government may realize that they are appreciated. Though hand books of South Australia, they necessarily have a considerably wider field of interest.

Yours, etc.,

T. HARVEY JOHNSTON, Honorary Secretary,
Handbooks Committee, British Science Guild (South Australian Branch).

The University of Adelaide,
August 3, 1934.

BROADCASTING.

SIR: The National Broadcasting Commission has arranged with the Victorian Branch of the British Medical Association to supply it with the names of medical men competent and willing to broadcast through the national stations.

A subcommittee of the Council has furnished a suitable roster of specialists and general practitioners, headed by the President-Elect of the British Medical Association, Sir Richard Stawell. The broadcasts will be relayed over all the "A" class stations in Australia at a peak evening hour.

The usual safeguards, for example, treatment anonymity, refusal to supply names of lecturers subsequent to the broadcast lecture will be observed, and the broadcast, as far as possible, will be entertaining as well as instructional.

Will it be too much to ask medical men to direct their patients' attention to this series of talks and to hear them themselves? The first will take place on August 27.

Additional names of lecturers will be acceptable and received by Mr. Crouch on behalf of the subcommittee.

Yours, etc.,

D. ROSEBY.

339, Church Street,
Richmond Hill,
August 4, 1934.

LOW BACKACHE AND TIREDNESS.

SIR: Dr. McRae Russell asks me in the journal (July 28) a question which appears to belong to the same class as that asked by those gentlemen painted by Anatole France, who were wont to leave off trying to convert pinchbeck into aurum so that they might discuss the problem: "If a pig were conveyed to market suspended in the air by means of a rope from a hand, did the rope or the hand convey the pig?" Bearing the above knotty problem in mind, I shall proceed to answer the question: "If an organism suffers from tiredness, is that condition a symptom, a psychological mood, or a metabolic state?"

I have given much attention to tiredness and fatigue during the last ten years, when I had to wrestle with the "pig problem" stated above in another form: "Why does one horse tire to nothing after six furlongs when Phar Lap could do two miles without turning a hair, and an Arab mare, on a handful of dates and a pint of water, can keep up with a racing camel over a desert stretch of a hundred miles and be ready for a second go next day, showing no signs of fatigue?

Tiredness is a minor degree or form of fatigue, which arises during exercise and is the expression of the normal physiological action of different kinds of tissue, but particularly muscle and nerve. So long as the tissues work within physiological bounds, tiredness is merely a physiological event in a vital process and can be regarded with safety as a symptom or as the expression of the degree of temporary lessening of irritability or power, which our daily experience shows us will pass off after an interval of rest. If, however, tiredness becomes fatigue, and fatigue goes on to exhaustion, and exhaustion to shock, then we have passed far beyond the bounds of physiology and are in the domain of pathology; and we are then faced with a symptom which is now the expression of a pathological condition; true, but no longer tiredness—it is now fatigue *et cetera*.

With regard to tiredness being a metabolic state, the very beautiful researches made by Professor A. V. Hill, standing on the broad shoulders of Meyeroff, have demonstrated the fact that the old idea of Mosso and others that fatigue was intimately connected with metabolic products is now shown to be true as regards muscle tissue; and the metabolic product that can slow down and tire muscular action is lactic acid; so that we must regard tiredness as a symptom or manifestation of a normal physiologic metabolic process, the relief of which depends on the supply of oxygen; this is then a different species of symptom, or a symptom of a different species of tiredness.

As regards the connexion between tiredness and the brain cells, this must be considered from two angles: the psychical and the histological. As regards the psychical element in tiredness, we only have to experience the rapid passing away of the "hardly-able-to-stand" feeling when at Randwick if the last race is won by something on which we have our money. Again, when exhausted we sink in a meadow too tired to admire the beauty of our surroundings, but are galvanized into action and run a hundred yards in eleven seconds because we suddenly become aware of a bull coming slowly o'er the lea. Here is introduced the interesting factors "buck up" and "guts", both of which are expressed by the lessening of the symptom of tiredness and fatigue, brought about by aid of endocrine secretions, while the gonads may help by supplying us with a cocktail. I think it would be correct to say that tiredness is frequently accompanied by psychical manifestations, which are not necessarily exclusively indicative of tiredness.

I should like to take this opportunity of drawing attention to a point which I think physiologists neglect. It became abundantly clear to me that tiredness largely depends on inheritance; that is to say, each individual inherits tissues whose proneness to tiredness depends on Mendelian factors. This was the ultimate conclusion that I arrived at when explaining that the distance a man or a horse can run largely depends on the staying power of the stock from which he is descended; and "guts" is an inherited attribute and indicates, among other things, the power of the brain cells and the body tissues to resist and fight against fatigue.

I was indeed disgusted to notice how English physiologists, with the exception of Langdown Brown, had failed to notice the wonderful work of Crile, of Cleveland, who has devoted thirty years to the elucidation of the changes in brain cells in fatigue, exhaustion and shock.

I think that one is justified from the evidence collected in saying that tiredness is unaccompanied by any morbid change that can be recognized when tissues are examined under the microscope: but the evidence produced by Crile, that after we pass from tiredness to fatigue and to exhaustion we have definite changes in the brain cells, which changes may cause the brain cells to be functionally impaired or broken down by the violence of the stimuli, the inceptive stage is indicated by the early stages of hyperchromatism, which can be demonstrated, the next stage being chromatolysis.

Thus, in my way of thinking, the essential difference, as regards the brain cells, between a condition of tiredness and a condition of fatigue and exhaustion is the difference found in the physical change in the brain cells; with tiredness nothing is found, though it is possible that the nucleus of a cell is more of a fluid body than is generally admitted; and tiredness may possibly be the result of the fluid part of the brain cell being affected, while fatigue is manifested in the change in the nucleus and cytoplasm.

In reply to Dr. McRae Russell, then, I would say that tiredness is always a symptom and no pathological change in nerve cell marks its occurrence; it is really a part of the normal vital chemical events in the life of tissues and, as such, occurs during the metabolic changes in muscles, but it is not itself a metabolic state; it is an event incidental to metabolism and its occurrence depends on the amount of oxygen supplied—the less the oxygen the more the tiredness, because the more the accumulation of lactic acid.

And now I hear the alarm bell of the editor, and so I had better sum up my reply to Dr. McRae Russell after the manner of the man who, having lost his mother-in-law, was asked by the undertaker "if he would like her buried, embalmed or cremated", and he feelingly replied: "Do all three; take no risks!" And so I do not propose to take any risks as regards the nature of tiredness, but do here declare that there is not one tiredness, but three varieties, psychical, neural and metabolic, and that this trinity-esque symptom is at once illuminated when my suggestion is adopted that as staying power in an animal depends on the possession of tissues inherited on Mendelian lines from progenitors possessing tissues having staying power, so tiredness, the very antithesis of staying power, is predisposed by the absence of those inherited factors always associated with stamina. If energy be the capacity of doing work, stamina is the measure of the intensity with which a task is executed, while tiredness is the manifestation (symptom) of the low degree of this intensity.

We should not overlook the fact that the researches of the brilliant Indian scientist Sir Jagadis Chunder Bose, F.R.S., has shown that fatigue is exhibited in vegetable tissues and is due partly to the exhaustion of the nervous system of plants and to processes of metabolism, and that there exists a unity of physiological mechanism in all life; and so we find in the plant and in the animal similar contractile movement in response to stimulus, similar cell-to-cell propagation of pulsatory movement, similar circulation of fluid by pumping action—the key to the mystery of the ascent of sap—similar nervous mechanism for the transmission of excitation, and similar reflex movements at the distant effector; and so we need not be surprised when we encounter the phenomenon of fatigue in the plant world.

I trust if I have not amused or convinced Dr. Russell, I have at least directed his attention to aspects of one of the most interesting concomitants in vital processes, alike common to the shop girl and to the gum tree.

Yours, etc.,

W. J. STEWART MCKAY.

Lismore,
New South Wales,
Undated.

THE MORTALITY IN APPENDICITIS.

SIR: With Dr. Smalpage's contention that "all are agreed that general toxæmia resulting from the local infection is the cause of death . . ." I do not agree. I would rather accept Sampson Handley's view that paralytic ileus and not toxæmia is the cause of death in most cases.

Death in appendicitis in the great majority of cases results from delay in diagnosis or treatment where a diffuse rather than a localized peritonitis develops. "The serum poured out by the body" comes from the vessels in the subperitoneal region of the viscera or parietes that have undergone endothelial spoiling. A drainage tube does not drain away this fluid or the toxins from the general peritoneal cavity. If we admit that it drains at all, it only drains a very localized area, as the open end and side openings are very soon closed with plastic lymph or by the application of coils of intestine or omentum. How, then, can the introduction of antitoxic serum along a drainage tube reach the general peritoneal cavity, and how can any quantity greater than the cubic capacity of the drainage tube be introduced?

The term antitoxic serum is vague. Is this any antitoxic serum or a specific antiserum prepared against the diverse bacterial flora found in appendicitis?

It is to be hoped that no practitioner will be induced to introduce a drain tube into the peritoneal cavity in cases of appendicitis solely for the purpose of filling the same drain tube with some kind of antitoxic serum.

Yours, etc.,

ALFRED J. TRINCA.

12, Collins Street,
Melbourne,
August 6, 1934.

Books Received.

THE LYOPHILIC COLLOIDS (THEIR THEORY AND PRACTICE), by M. H. Fischer and M. O. Hooker; 1933. London: Baillière, Tindall and Cox. Royal 8vo., pp. 254, with 84 illustrations. Price: 22s. 6d. net.

HANDBOOK OF FILTERABLE VIRUSES, by R. W. Fairbrother, M.D., M.R.C.P.; 1934. London: William Heinemann (Medical Books), Limited. Crown 8vo., pp. 202, with illustrations. Price: 7s. 6d. net.

AIDS TO OPERATIVE SURGERY, by C. P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.; Second Edition; 1934. London: Baillière, Tindall and Cox. Foolscap 8vo., pp. 233, with three illustrations. Price: 3s. 6d. net.

Diary for the Month.

AUG. 21.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 21.—Tasmanian Branch, B.M.A.: Council.
AUG. 22.—Victorian Branch, B.M.A.: Council.
AUG. 23.—New South Wales Branch, B.M.A.: Clinical Meeting.
AUG. 24.—Queensland Branch, B.M.A.: Council.
AUG. 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.
AUG. 30.—South Australian Branch, B.M.A.: Branch.
AUG. 30.—New South Wales Branch, B.M.A.: Branch.
SEPT. 3.—New South Wales Branch, B.M.A.: Organization and Science Committee.
SEPT. 4.—Tasmanian Branch, B.M.A.: Council.
SEPT. 5.—Western Australian Branch, B.M.A.: Council.
SEPT. 5.—Victorian Branch, B.M.A.: Branch.
SEPT. 6.—South Australian Branch, B.M.A.: Council.
SEPT. 7.—Queensland Branch, B.M.A.: Branch.
SEPT. 11.—Tasmanian Branch, B.M.A.: Branch.
SEPT. 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
SEPT. 14.—Queensland Branch, B.M.A.: Council.
SEPT. 18.—Tasmanian Branch, B.M.A.: Ethics Committee.

Medical Appointments.

The undermentioned appointments have been made to the Honorary Medical Staff of the Royal Alexandra Hospital for Children, Camperdown, New South Wales: Dr. L. H. Stanton-Cook (B.M.A.), Honorary Ophthalmic Surgeon; Dr. F. G. Roberts (B.M.A.), Honorary Assistant Ophthalmic Surgeon; Dr. J. W. S. Laidley (B.M.A.), Honorary Urologist; Dr. M. S. S. Earlam (B.M.A.), Honorary Assistant Urologist; Dr. N. H. Meacle (B.M.A.), Honorary Assistant Ear, Nose and Throat Surgeon.

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Colonel R. M. Downes (B.M.A.) has been appointed Director-General of Medical Services to the Commonwealth Military Forces of Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xiii, xiv, xv.

BRITISH MEDICAL ASSOCIATION, VICTORIAN BRANCH: Medical Secretary.
CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.
FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA: Resident Junior Medical Officer.
LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officers.
MATER MISERICORDIÆ CHILDREN'S HOSPITAL, BRISBANE, QUEENSLAND: Resident Medical Officer.
SAINT MARGARET'S HOSPITAL FOR WOMEN, SYDNEY, NEW SOUTH WALES: Resident Medical Officer.
TAMWORTH DISTRICT HOSPITAL, TAMWORTH, NEW SOUTH WALES: Pathologist.
THE WOMEN'S HOSPITAL, CROWN STREET, SYDNEY, NEW SOUTH WALES: Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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